THE IRON TRADE REVIEW

VOLUME XXXI. CLEVELAND, O. MAY 19, 1898. CHICAGO, ILL. NUMBER 20

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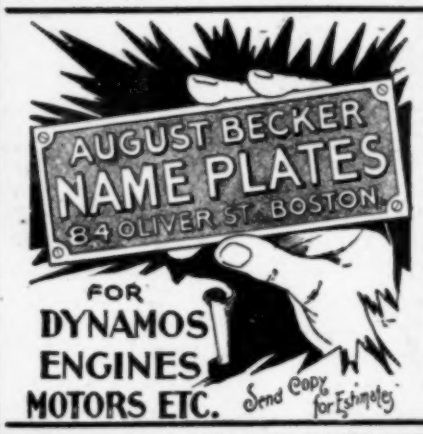

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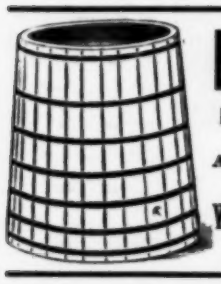

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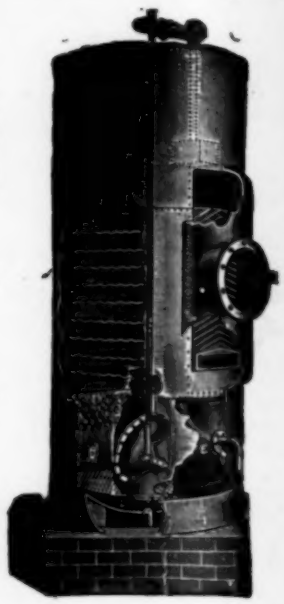

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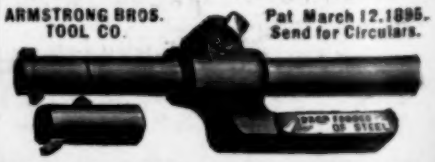

98 W. Washington St., CHICAGO.

THE IRON TRADE REVIEW

VOLUME XXXI. CLEVELAND, O. MAY 19, 1898. CHICAGO, ILL. NUMBER 20

THE WEEK IN IRON CIRCLES.

THE MARKET AT LARGE.

The week has brought the general conviction that the war will be longer than has seemed probable before, and in some quarters the retarding effect of that belief upon business has been apparent. Yet other facts in the iron situation reinforce optimistic views. No signs appear of a slowing of mill operations. Bar iron, sheet and tin plate mills, in the six weeks intervening before the annual shut-down for scale adjustment, will make large outputs. If the changes talked of in the meeting of the Amalgamated Association wage committee are ratified by the convention which began its sessions in Cincinnati this week, the chances are excellent for idleness throughout July. How much the war is responsible cannot be judged—doubtless very largely—but it is plain that there has been a change from the policy of freely contracting for months ahead which prevailed in December, January and February. With the mid-year so close at hand, a very large volume of requirements for the second half might be expected to be under negotiation just now. The West appears to be under less restraint than other sections and the Chicago district has quite outrun its record. The agricultural demand, which fortunately refuses to be amenable to any of the influences affecting other interests, explains the signal prosperity of Western mills and foundries. The East, which has shown itself most sensitive to the fluctuating political and financial conditions in the past few years, now feels more than any other section the effect of the war. Foundries in the middle Atlantic section have more work than in several years, but in New England the cotton mill strikes have reduced the melt of iron. Pig iron prices in the East remain weak, and in Central territory are unchanged, but in Chicago and tributary districts incline to be firmer. Western Pig Iron Association reports show a decrease of 9,000 tons in reported stocks of coke and anthracite iron in April and of 3,000 tons charcoal iron. Bessemer stocks have decreased of late and this condition is expected to be accented in May. The new demand for steel billets in the Pittsburg district is not strong and prices are weak at $15 Pittsburg mill and $14.75 in the valley and Wheeling, but in Chicago 25,000 tons was sold last week, 10,000 tons of which is to come from the Central West. Sheet and tin plate bars are still scarce at $17 to $17.25, Pittsburg maker's mill. Some sales of Bessemer pig iron have been made at Pittsburg, at $10.35, from middle hands, and it would appear that the market is now about up to furnacemen's stocks, for which $10.65 Pittsburg is asked. Gray forge has shown more than usual activity in the past week. Sales at Pittsburg were made at $9.15 and at valley furnace at $8.75 to $8.90, the Pittsburg price being relatively the lower. Some bridge requirements have furnished tonnage for the structural mills i n the week, but architectural demand is light. Boiler works are furnishing a good quota to the plate mills, which promise to be the best feature of mill operations for months to come. The business in bars has been good, Pittsburg and the valley particularly taking large contracts. The tin plate trade is featureless. Mills have plenty to occupy them for the next three months, but on later deliveries prices are very weak and buyers have no interest.

PITTSBURG.

OFFICE OF *The Iron Trade Review and Industrial World.*
808 TRADESMEN'S BUILDING, May 18.

Specifications on contracts continue to come in well and are heavy enough to give full occupation to the mills. What would be the summer's tonnage if the war were settled, is a favorite topic for speculation among the mills, and there is little dissent from the opinion that the year would be a record-breaker. A buying movement in gray forge is an incident in the week.

PIG IRON.—Gray forge has been more active for a week than Bessemer, both in Pittsburg and the valleys. Sales are reported of 4,000 tons in Pittsburg at $9.15, and 2,500 tons in the valleys at $8.90. Other valley sales are noted at $8 75, but in general the valley basis is relatively higher than Pittsburg. In Bessemer, transactions—which are still confined chiefly to iron outside the producers' circle—are not large, and deliveries beyond July are scarce Stories have been current of sales by valley furnaces in violation of their agreement, the Bessemer price being held but basic or foundry iron being sold at the same time under the market. Spot iron, however, is not affected by the rumors and cannot be had from outside hands below $9.75. The reports have not perceptibly weakened the market. Quotations in Pittsburg are as follows:

Bessemer, valley	9.75 to	10.00
Bessemer, Pittsburg	10.40 to	10.65
No. 1 Foundry	10.40 to	10.50
No. 2 Foundry	9.90 to	10.00
No. 3 Foundry	9.50 to	9.75
Gray Forge, valley	8.75 to	8.90
Gray Forge, Pittsburg	9.15 to	9.25

STEEL.—Billet specifications have been very slow coming in for a few days, and the mills are complaining. This tardiness does not help prices and quotations at Wheeling and Pittsburg mills are $14.75 and $15. The situation is reversed in sheet and tin bars where deliveries cannot keep pace with specifications. Mills quote $17 and $17.25 at mills. Rods are inactive and quoted at $20.50 and $21, maker's mill.

SHEETS. — The agricultural orders of the week included some sheet inquiries which were bid on by local mills. The general buying movement is still delayed and the mills are anxious for tonnage. The base held by the mills is 1.95c for No. 28. Galvanized are selling at 80 and 7½ per cent off.

FERRO-MANGANESE.—A delivered price of $50 is being made on 80 per cent domestic ferro-manganese, which nets the furnace from 48.50 to 49.50. Very little foreign is being offered.

STRUCTURAL MATERIAL.—The structural steel manufacturers made no price alterations at their meeting last Wednesday, and the old schedule is maintained as follows: Beams and channels, 3 to 15 inches, 1.15c; 18 to 24 inches, 1.25c; tees, 1.20c; zees, 1.15c, and angles, 1.05c. The Washington court house—600 tons—and a 1,500 bridge contract are the only conspicuous orders of the week. The absence from the market of any structural work of any size shows clearly one direction in which the war is retarding business. The necessary buying in 100- to 600-ton lots, is steady and gives both local mills

all the tonnage necessary to steady operation. Universal plates, in connection with other shapes are selling at 1c; alone, at 1.10c.

BARS.—Agricultural inquiries have been heavy during the week, the largest being a Western inquiry for 15,000 tons. General inquiries are also more numerous, one lot of 1,000 tons being on the market. Steel bar orders are fewer and bars in consequence are weaker. Prices have been accepted of late below 95c—the general quotation. Bar iron in car lots is also quoted at 95c valley. Branded muck bars are quoted from 1.25c up.

SPELTER.—Spelter is higher than a week ago. We quote 4.20 and 4.22½.

IRON AND STEEL SKELP.—Skelp for the week is selling as follows: Steel, grooved, 97½c to 1c; sheared, 1.05c to 1.07½c; iron, grooved, 1.05c to 1.07½c; sheared, 1.12½c to 1.15c.

RAILS AND TRACK MATERIAL.—Rails are quiet at 18, Pittsburg, and track material is quoted as follows: Iron track-bolts, 1.65c to 1.70c; steel spikes, 1.45c to 1.55c; splice bars, 1.10c to 1.15c; links and pins, 1.20c.

SPIEGEL.—Spiegel is quoted at $23.50 and $24.

OLD MATERIAL.—Iron rail sales for a week have been numerous, the tonnage running into the thousands on individual lots. For 2,500 tons $13.75 was paid in the valley and 13.65 valley for 1,000 tons. Steel rails were inactive. Quotations are on the following basis: Car wheels, Pittsburg, $10.25, gross; heavy melting stock, $10.75, gross; cast borings, $5.75; billet and bloom ends, run of mill, $11; wrought turnings, $7.50, gross; busheling scrap, $9.50, net; machine scrap, $9, gross; wrought scrap, $11.50, net; No. 1 cast, $9.25, gross; cast borings, $6, net; old steel rails, $10.50.

CHICAGO.

OFFICE OF *The Iron Trade Review and Industrial World.*
1142 MONADNOCK BLOCK, May 18.

The last week has been fully up to the average in point of sales, and otherwise has been quiet, with no notable features. The demand for all classes of iron and steel has been good, and has every indication of keeping up. A number of the large buyers here and a majority of the smaller ones have still to fill their requirements for the balance of the year, and it is thought sales to fill this demand will keep the tonnage of orders large up to the time of the usual summer quiet. The demand for agricultural implements and other goods manufactured in this territory is unusually heavy this year, and manufacturers are making arrangements for a much larger production than ever before.

PIG IRON.—Only one especially large order was closed last week—the Pullman company having bought 6,000 tons of Southern iron—but general sales were very good and made an excellent aggregate. The larger part of the business of the week went to Southern furnaces, although the local furnaces sold their output for the week. Prices of Northern irons are fully maintained at the quotations we give. Some concessions have been made by Southern furnaces outside of the combination, but these furnaces are asking full association prices in a good many cases, and furnaces in the combination are holding to quotations. There is some talk of an advance in the prices of Southern irons, and there is very little doubt that one could be made if the furnaces outside of the combination would follow the lead of the others. Sales of Lake Superior charcoal iron have not been large, but most of the furnaces are short of some grades, and on these quotations have been advanced materially. Prices are made as follows:

Lake Sup. Charcoal	$11 50@13 00	South'n Coke No. 3	$10 10@10 35
Local Coke Fdy. No. 1	11 50@12 00	Southern No. 1 Soft	10 60@10 85
Local Coke Fdy. No. 2	11 00@11 50	Southern No. 2 Soft	10 35@10 60
Local Coke Fdy. No. 3	10 75@11 00	South'n Silveries	11 25@11 50
Local Scotch Fdy. No. 1	11 50@12 00	Jackson Co. Silveries	12 50@14 50
Local Scotch Fdy. No. 2	11 00@11 50	Ohio Strong Softeners	12 00@12 25
Local Scotch Fdy. No. 3	10 75@11 00	Alabama Car Wheel	14 00@16 00
South'n Coke No. 1	10 60@10 85	Malleable Bessemer	11 50@12 00
South'n Coke No. 2	10 35@10 60	Coke Bessemer	11 50@12 00

BARS.—Sales last week were good, and included several quite large contracts. The largest reported was one of 1,200 tons, but others were made of equal if not larger size. The implement manufacturers have not yet bought heavily, but are expected to do so soon. General business in small lots continues good. The market is firm at about last weeks quotations. Common iron is quoted at 1.05c to 1.10c; guaranteed, 1.10c to 1.15c; soft steel bars, 1.15c to 1.20c.

RAILS AND TRACK SUPPLIES.—Sales have been only small, and there is very little probability that they will be increased soon. The local mills are busy filling old orders. Quotations are as follows: Rails, $20 to $22.50, according to specifications; steel splice bars, 1.15c to 1.25c; track bolts, with square nuts, 1.80c to 1.90c; hexagon nuts, 1.90c to 2c; spikes, 1.50c to 1.60c.

BILLETS AND RODS.—The local mills report sales of 15,000 tons of billets in the past week, and it is also reported that sales of about 10,000 tons were made by Eastern mills in this market. There is a large demand for billets. Rods have been quiet, with only a few small sales. Billets are now quoted at $16 to $16.50, and rods at $22.25 to $22.75.

CAR ORDERS.—One order for 1,000 cars was placed last week, and several smaller orders. Car material is in good demand, and sales last week were excellent.

STRUCTURAL MATERIAL.—The market was quiet, and no large contracts were closed, nor did any new ones come up to be bid upon. General business in small lots was good, and the inquiries in hand give evidence of its continuing so. Quotations are as follows: Beams, 15-inch and under, 1.30c to 1.35c; 18, 20 and 24-inch, 1.40c to 1.45c; angles, 1.20c to 1.25c; plates, 1.15c to 1.20c; tees, 1.35c to 1.40c. Small lots from stock are quoted at ¼ to ½ cent higher.

PLATES.—The local mills sold about their output for the week, the orders being all comparatively small. The demand is not heavy, and while it is sufficiently steady to insure good sales every week, nothing large is expected. Prices are made as follows: Tank steel, 1.15c to 1.20c; flange steel, 1.20c to 1.40c; fire box steel, 1.85c to 5c.

SHEETS.—There has been a good demand for both black and galvanized sheets, and several large contracts were closed last week, with others in prospect for the immediate future. Quotations are made at 2c to 2.10c for No. 27, black, and 8o and 10 per cent discount for galvanized.

MERCHANT STEEL.—The implement manufacturers are figuring on their needs for the coming season, and are apparently anxious to buy, while the mills are not especially anxious to take business for long deliveries at present prices. Some contracts of good size were closed last week, and the small order business was excellent. Prices follow: Open-hearth spring, tire and machinery steel, 1.60c to 1.70c; smooth-finished machinery steel, 1.60c to 1.65c; smooth finished tire, 1.50c to 1.60c; tool steel, 5.50c to 7.50c; specials 11c and upwards.

SCRAP.—Some sales of old iron rails were made last week, and also two or three small sales of old wheels. Aside from this business the market was quiet, with only a few small sales of any kind of material. The demand is not especially large for any class of scrap.

Old iron rails, gross	$12 00@$12 25	Axles, net	$14 25@$14 75
Old steel rails, long, gr.	10 50@11 00	Cast borings, net	4 00@4 25
Old steel rails, short	9 00@9 25	Wrought turnings, net	5 50@6 00
Old wheels, gross	11 00@11 50	Axle turnings, net	6 25@6 75
Railroad forge, net	12 00@12 50	Mixed steel, gross	7 25@7 50
Dealer's forge, net	10 50@11 00	Stove plates, net	6 00@6 25
No. 1 mill, net	7 50@8 00	Heavy melting steel, gr.	8 25@8 50
Heavy cast, net	8 50@9 00	Old iron splice b., net.	13 25@13 50
Malleable cast, net	8 00@8 50		

CLEVELAND.

OFFICE OF *The Iron Trade Review and Industrial World.*
27 VINCENT ST., May 18.

Some of the well-known Mesabi ores have sold in round lots in the past fortnight, and conditional sales made earlier in the year are more definitely located. Adams ore has sold at $2.25 and Fayal and Genoa at $2.20, with guarantees of the benefit of any lower price that may be made. There are indications of sharp competition between the two large interests on the range—quite as keen as last year's, though prices are not expected to reach the extreme point touched last year. But if a Mesabi ore corresponding closely in physical characteristics and analysis to old-range ores selling at about $2.75, has been offered at $2.15 the past week, as reported, it would seem that the situation has not greatly improved for the seller over 1897. Certainly this basis is disastrous for the independent producer, even after important concession in his royalty. It is estimated that 1,000,000 tons of Mesabi ores, outside of the early sales in the Chicago district, have been sold, chiefly in the valleys and the Wheeling and Cleveland districts. It may be that the failure to come to any understanding on Mesabi ores may result in enough weariness with the mining of great outputs and marketing them without profit,

to lead to a more determined effort to agree by next year. The movement of 1898 ore thus far is sluggish. Furnacemen have held back shipments to get their yards in shape, and at some docks there has been a shortage of cars. To make the shipments counted on for 1898 there must be a much better adjustment of vessel, dock, railroad and furnace operations than has been possible thus far. Some docks are starting out by refusing to receive unsold ore, as stocks of sold ores that are bound to accumulate from lack of car facilities, through the season, will be embarrassment enough.

PIG IRON.—There was some reduction of Bessemer stocks in the Mahoning valley in April, but a slight increase in the Shenango valley. May is expected to show a considerable decrease and June likewise, as other furnaces are banked. No further sales of Bessemer on the $10 basis at furnace are reported, and in view of the heavy sales of second quarter metal made a few months ago, no great activity is counted on, though with the well maintained output of steel moderate additional purchases would not be surprising. Foundry iron has been in fair demand, but $9.50 at furnace for No. 2 is not so generally maintained as minimum. Sales of gray forge have been made at $8.75 in the valley and there is something doing in sandless basic. We quote Cleveland deliveries:

Bessemer, second quarter	$10 65	Valley Scotch No. 1	$10 65@10 75
No. 1 Strong Foundry	10 65	Valley Scotch No. 2	10 25@10 40
No. 2 Strong Foundry	10 15@10 40	Gray Forge	9 25
No. 3 Foundry	9 65	Lake Superior Charcoal	11 50

BILLETS AND SHEET BARS.—Steel billets have been weaker of late and $15 at Pittsburg maker's mill has been cut, though $14.85 in the valley is probably minimum. In tin plate bars some business has been done in Cleveland. Quotations are $17.25 to $17.50, delivered. Tin bars for prompt delivery are scarce and in one instance tin plate mill operations were stopped by failure to secure bars.

FINISHED MATERIAL.—More activity in finished steel has prevailed in this market for the past week than in the few preceding it. Bridge work for railroads has been more of a factor than in months. Toledo has several contracts on hand and other Northern Ohio works have made purchases, the total closed and pending being about 3,000 tons. A sale of 1,000 tons of flange steel is reported for boiler purposes, and there is a good supply of orders on hand at boiler works. Some rail purchases are about closed, a tonnage of 4,000 to 5,000 being divided between steam and electric lines. Bars have had a good sale, chiefly to nut and bolt concerns, the requirements including open-hearth stock. Steel bars have been weak and are again close to 90c Pittsburg on large orders. Some large business in iron bars has been placed recently, but at low prices. Valley mills will have about all they can do to July 1, when the scale shut-down comes. At the prices ruling lately the proposed $4.50 puddling rate has less justification than it had a year ago. We quote beams and channels 1.25c Cleveland; bars, 1c to 1.05c; No. 27 black sheets, 2c; angles, 1.15c; plates, 1.10c Pittsburg.

OLD MATERIAL.—A steady market, with more activity in rolling mill material than in other lines is reported. Old iron rails have sold at $13.65 and $13.75 in the valley. We quote Cleveland deliveries: Old iron rails, $13; old steel rails, $9.75; No. 1 railroad wrought scrap, $11.50; old car wheels, $10.50. Little is doing in wheels, as stocks are being held for better figures than now offered.

CINCINNATI.

May 17.

The business of the week has been very satisfactory to the furnaces. Orders have been numerous, though in this district no very large blocks have been taken. It was feared by some that the loss of the export business in pig iron, steel and their products would result in accumulations and heavy markets, but the domestic activity has been such that the country practically absorbs the make, which continues on the line of a million tons of pig iron per month. The manufacturers of agricultural implements reasonably anticipate a still further improvement in their business, and with good crops not only implement makers but every department of trade will enjoy the advantages of the immense wealth the farmers will command. The war engages the attention of the people, but it does not interrupt business to any appreciable extent. Some of the furnaces have advanced their prices a little. We quote for cash f. o. b. Cincinnati: Southern coke, No. 1 foundry, $9.75; No. 2, $9.50; No. 3, $9.25; gray forge, $8.75; mottled, $8.75; No. 1 soft, $9.75 to $10; No. 2, $9.50 to $9.75; Belfont coke, No. 1, Lake Superior, $11 to $11.50; Belfont coke, No. 2, Lake Superior, $10.50 to $10.75; Hanging Rock charcoal, No. 1, $14.50 to $15.50; Tennessee charcoal, No. 1, $12.50 to $13; Jackson Co. silvery, No. 1, $12.50 to $13; Standard Georgia car wheel, $14.25 to $15.

BUFFALO.

May 17.

The market continues rather quiet, but a few trades are in process for large amounts, which point to activity later on. The canal opened May 10, and shipments of pig iron promptly commenced on a large scale. The local furnaces are shipping heavily by rail also, but find no improvement in prices. Industries in the territory tributary to Buffalo are not as actively employed as it was hoped at the beginning of the year they would be, but an early cessation of the war would soon remove the obstruction to business. We quote for cash f. o. b. cars Buffalo: No. 1 strong foundry coke iron, Lake Superior ore, $11 to $11.25; No. 2, $10.50 to $10.75; Ohio strong softener No. 1, $11.50 to $11.75; No. 2, $11 to $11.25; Jackson Co. silvery No. 1 $14; Southern soft, No. 1, $11.50 to $11.75; No. 2, $11.15 to $11.35; Lake Superior charcoal, $11.50.

Foundrymen's Convention at Cincinnati June 7-10.

In addition to the list of papers already announced for the annual convention of the American Foundrymen's Association at Cincinnati June 7-10, it is stated that James Bowron, of the Tennessee Coal, Iron & Railroad Co., will address the convention, and that a paper will be read by Alexander Tropenas, who recently arrived in the United States from France, on "The Tropenas Steel Casting Process," and one by O. Benson, C. E., on the "Advantage of Iron Construction for Foundry Buildings." The delegates will be taken on a 14-mile trip down the Ohio River to Addyston, where the Addyston Pipe & Steel Co.'s plant will be inspected. Iron is being melted here, it is stated, at the rate of half a ton a minute eight hours a day. A "smoker" on Wednesday evening, June 8, is the one of features of entertainment arranged by the Cincinnati committee, many of whose members were on the efficient committee that entertained the Western Foundrymen's Association last October.

Infringement Suits over Pneumatic Tools.

A Barre, Vt., paper mentions the beginning of a suit there by the American Pneumatic Tool Co., of New York, against C. P. Gill & Co., to enjoin the use of the Clement tool. Other cases involving infringement have been brought by the same company. In the suit against the Chicago Pneumatic Tool Co., which sells the Boyer tool, the American Pneumatic Tool Co. applied to Judge Townsend in United States Circuit Court for an order compelling the defendants to complete their testimony by a certain date. The court granted the order and fixed July 30, 1898, as the date. A case is also pending against the Consolidated Pneumatic Tool Co., which sells a valveless tool.

THE Lorain Steel Co. has closed contracts as follows for its new blast furnace plant at Lorain, O.: Boilers—10,400 h. p.; the Cahall Sales Department of the Aultman-Taylor Co. Locomotives—Cook Locomotive Works and Pittsburg Locomotive & Car Co. Pump motors—General Electric Co. Power generator—Siemens & Halske Electric Co. Hoisting engines—Crane Elevator Co. Blooming mill reversing engine, 55 x 60—Macintosh, Hemphill & Co. High duty pumping engines—Holly Mfg. Co. Foundations—Cleveland Stone Co. Cement—The Stowe-Fuller Co., Cleveland. The balance of the contracts are well under way, and probably all will be closed up in the next 30 days.

THE Board of Estimate of New York City has appropriated $200,000 to the new East River Bridge Commissioners to do such further work as is necessary to prevent deterioration of or damage to the work already commenced. The money necessary for the completion of the work is still refused and no contracts have been let. Of late all work has been stopped by the lack of funds.

THE IRON TRADE REVIEW

AND

INDUSTRIAL WORLD.

DEVOTED TO MACHINERY, METAL-WORKING AND FOUNDRY TRADES AND IRON AND STEEL MANUFACTURE.

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WAYS OF GAUGING SUCCESS.

The *Railway Review* quotes with approval from the comments made in these columns upon the recent address of W. R. Warner before Cleveland's Chamber of Commerce. The chief feature of the address, it may be remembered, was the emphasis laid upon the possibility of employes rising to the position of employers under the American regime, the inference being that the position of leadership is within any man's attainment if he have "tact, energy, earnestness and a fixity of purpose." The *Review* says:

> The motive of a discourse of this order is unquestionably a praiseworthy one. To stimulate a human mind by the citation of attainment of others of the human race is, in the abstract, perfectly legitimate and much to be desired. But it is easy unwillingly to mislead the young. In support of the theme of such a discourse it is, as our contemporary says early in the course of its comment, possible to duplicate such examples, "and not less strikingly, we are sure, in any similar body in the country." But it is likewise possible to set a fictitious standard of probable attainment which, instead of nerving an aspirant to the accomplishment of ultimate and reasonable success, may render his entire subsequent life wretched, by reason of failure to astonish the world with the consummation of a meteoric business, scientific, or industrial career, which constitutes the exception, and thus proves the sober rule of life.
>
> We have in mind at this moment an old-time school superintendent, the elements of whose stock speech for stated intervals were made to assemble about and culminate in the following sentence: "And so you climb the ladder of success, one round at a time until at last you reach the top." We came up—or down—through several of the formative years of childhood cherishing a mental picture of that figurehead of success, aimlessly perched upon the top round of the ladder, which apparently never had any fairly defined resting place at bottom, and led to nowhere in particular at the top, before the realization was fully borne in upon us that the old superintendent's metaphor was incomplete.
>
> The earlier a young man realizes that all men may not be born to command; that, reverting to the former simile, there will be found men desperately clinging to every round of the ladder of success, while others never come within sight of it, or are trampled out of heart at its foot; that the very timber from which the ladder of success is framed must be hewn from the best growth of the human race itself, and that, at most, material success in life is meant to lead to something in the plan of creation which shall rise in importance above the vaults of the corporate treasurer—that much the earlier will he be fitted for the effective entertainment of whatever responsibility may be placed upon him, and by the opportunities of as many years as then remain to him are his chances of success increased.

It is important, as we have pointed out before, that the ideals held up before those who are just starting out should be in accord with conditions as they exist to-day. We recall the words of Wm. H. Pfahler, the well-known stove manufacturer, before the Western Foundrymen's Association at Cincinnati last October, and he has spoken to the same purport before other bodies of foundrymen. He reminded them that their employers had not the hope that 30 years ago was before the employers of to-day. Then, he said, it was possible for an industrious, ambitious, intelligent man to push up out of the ranks; there was always the stimulus of the possibility that some day he would own a shop of his own and be a director of affairs. But concentration, he pointed out, had become so generally the order of things that there is far less chance for a man to work his way from employe to employer. With that incentive taken away, he urged that it was important that conciliation should prevail and that such a policy should be adopted by manufacturers as would recognize the mutual interest of employer and employe.

Viewing the question from two standpoints, our contemporary from that of the unwisdom of emphasizing one kind of success as though it were the only kind or even the highest, and Mr. Pfahler from that of the changed conditions, which have made the employer's position far more difficult to attain, the two agree on furnishing the largest incentive to every man to make the most of the place in which he is. Let us hear more of the desirability of being successful as an employe. That is an ideal for which contempt has been encouraged far too much.

COST SYSTEMS ONLY A PARTIAL REMEDY.

The cost question has been treated with the consideration its importance deserves, in the various foundrymen's associations. The oldest of them all, the National Association of Stove Manufacturers, has papers on cost keeping and correct methods of cost determination at nearly every annual session. Some of these have been masterly expositions of the too little understood intricacies of price-making—that is, of establishing such a price as will really cover every item of cost and leave such a profit as will perpetuate the business. Jobbing foundrymen have coveted the stove foundrymen's association methods of educating the trade, the theory being that foundrymen have only to know what their product costs, to cease selling below that point. And it has been the generally accepted notion that the splendid record of the stove trade in the years of depression following 1892—its maintenance of prices when other lines went to pieces, and the payment of the wages of 1892 through every month of panic and depression, was due to the thorough understanding existing among its associated manufacturers and their intelligent grasp of the problems of

costs. There is no doubt that to an extent this impression is correct. The system of ascertaining costs as developed by the association is in use not only by its members but by a considerable number of non-members. The theory of it is that a manufacturer's worst competitor is not the one who has found out more than most men in his trade, but the one whose information is scant or faulty. And it is true as a general proposition, as President Prizer said to the stove manufacturers in their convention at Philadelphia last week, that "the most successful stove manufacturers are always those who are most willing to confer with their competitors and to impart and ask for information in regard to business policies and methods."

Yet the stove manufacturers are finding that not all men, whether association members or not, act on their knowledge. The sales department has as important a relation to profit-making as the manufacturing department. On this point Mr. Prizer's address makes these observations, which apply with equal force to other lines:

To my mind the problems involved in the sales department of the stove business are much more important than those involved in methods of computing costs. The cost question is important chiefly because of the influence which a correct knowledge of it may have upon the sales policies of our members. And it is certain that a correct method of ascertaining costs, fearlessly and scrupulously applied, should cause many stove manufacturers to reform their sales practice But of what avail is it to know correctly the cost of goods if we are to disregard this knowledge and permit our salesmen to sell goods at prices which our cost books show to be unremunerative?

Methods of selling goods, the instruction and training of salesmen, and the maitaining of proper prices, should receive as careful and exact attention as the manufacturing of goods. We may see the time when we will be so alive io the importance of selling goods aright that each stove manufacturer will employ a professor of the art of selling stoves. Salesmen are usually permitted, to too great an extent, to determine the sales policies of their houses. The salesman standpoint is apt, nine times out of ten, to be erroneous, unless he is a man very carefully trained and fully informed in the correct methods of carrying out sound business principles.

The salesman usually gauges success by the volume of sales, and as a rule he has a deep-seated and ineradicable belief that his house could make money by meeting all competition and going it one better. His Utopia is a condition under which his prices would be a little lower than those of any rival. Many salesmen act as though they were the paid agents and attorneys of the dealers to whom they sell goods. There are salesmen who annually give away in needless and unjust concessions to the trade more of the substance of their employers than would pay their salaries and expenses. The salesman who contracts the concession habit can easily persuade himself that it is hardly possible to sell goods without giving the dealer an extra advantage of some kind. This mistaken policy, instead of satisfying the trade, always results in further demands for allowances. A salesman, by persuading his employer to make unnecessary reductions in prices, may cause a manufacturer more loss in one season than it is possible to offset by any economies and advantages that can be effected in the manufacturing department in ten years.

It is not an unknown thing in the iron trade for manufacturers to make prices to meet reported cuts of competitors, when to do so took them clearly over their cost line. It is certainly true that "the manufacturer who has the courage to refuse to sell his product or any part of it, except at a profit, will be more prosperous and will in the end be better able to serve the interests of his trade than the manufacturer who, taking counsel of his fears instead of his prudence, meets the alleged cases of price cutting which are reported to him by his salesman." But still the wonder grows that manufacturers insist on adding demoralization to weakness by putting the taking of an order always first, while the making of a profit is treated as a good old-time maxim to be set aside as the emergency dictates.

There is no question of the correctness of Mr. Prizer's diagnosis. The weak feature of many a business beside the stove trade is the sales department. Educational work here is quite as necessary as in the shop end, which heretofore has been treated as the chief delinquent.

STATISTICS plainly indicate the reason for the idleness of most of the furnaces of the country that are now and have been for months past—several years in some cases—on the inactive list. The 176 coke and anthracite furnaces making iron May 1 had a total weekly capacity of 227,592 tons, or an average of 1,293 tons a week to the furnace. The 164 coke and anthracite furnaces out of blast May 1—within 12 of the number active—are put down for a total weekly capacity of 99,116 tons, or an average of but 604 tons a week to the furnace. Not more than a dozen or a score of the idle furnaces, it is safe to say, can make and sell iron profitably at to-day's price. Some of the balance, by a large expenditure of money for new stoves, new engines and other up-to-date equipment might be put in shape to make the tonnage required by the pace of to-day, but with nearly all of them the present shut-down will lengthen into deterioration and complete disuse. It would seem that the intervals of quickly expanding prices that heretofore have galvanized furnaces of moderate or small capacity into temporary activity are not to come again. And even with many furnaces that are counted fit because they are still making iron, the proposition to spend the money needed to bring them up to the constantly rising standard of efficiency is one that cannot be decided off-hand, as against the alternative of dropping out. It is not unreasonable to suppose that the 176 coke and anthracite furnaces now active will be equal to the production of 2,000,000 tons additional per year, with the improvements that will be made in the next two years. That would mean an annual production of 14,000,000 tons, or an average of 1,420 tons a week for 176 furnaces. On the other hand, if the consumption of iron, including exports, shall remain close to 12,000,000 tons, the capacity of furnaces now building and of those that are constantly being improved is so far in excess of the average stated, that the number needed for an output of 1,000,000 tons a month of coke and anthracite iron will be even less than to-day's.

A LOCAL paper says that a new brass foundry established at Waukegan, Ill., is making preparations to introduce a force of young women in its core-making department.

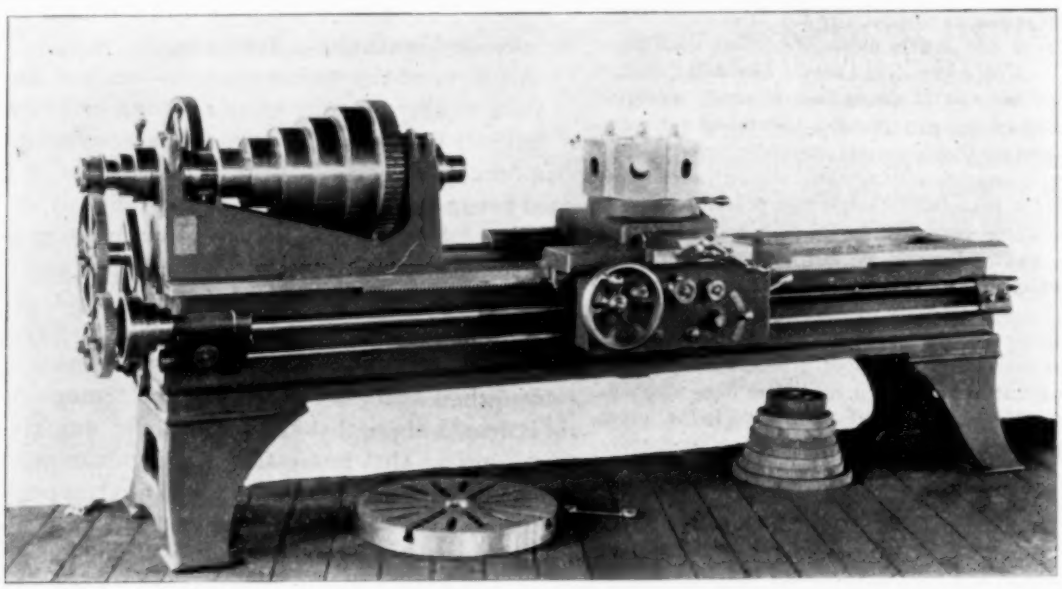
W. C. TEMPLE, well known as the head of the Cahall Sales Department, Pittsburg, was made commissioner of the beam pool at the meeting of the structural steel manufacturers, last week.

ENGINE LATHE, WITH TURRET.

The lathe shown in the illustration is a modification of the standard 24-inch engine lathe built by the Springfield Machine Tool Co., of Springfield, O., to serve the purpose of a heavy turret lathe—a type which has been constantly growing in favor with manufacturers of machinery. The headstock is neat and at the same time massive. The spindle is bored to receive 2-inch round bar in the rough, and is made from a forging of hard crucible steel in one piece with the collar, which forms a suitable surface for the face plate to screw against. This arrangement, in connection with large hollow spindle, affords an ample shoulder for the face plate, and permits of making the nose large enough to carry the heaviest chuck-work without making the diameter of front journal of spindle excessively large. In this case it is 4 inches in diameter by 7 inches in length. The diameter of nose is 3½ inches by 2¾ inches long, threaded two-thirds of its length, four threads per inch, U. S. standard. Thus the face plates have straight bearing on the nose equal to one-third of its length, which insures better wearing qualities and facilitates placing them in position, and as the pitch of the thread is coarse, a tendency to wedge tight enough to become difficult to remove is avoided. The cone has five steps for a 3½-inch belt, the largest speed being 16 inches in diameter, and the back gear ratio is 12 to 1, giving 10 speeds, increasing in geometrical progression.

With the gearing, a range of feeds from 9 to 65 an inch is possible, suitable for any purpose. The handle shown in front of the lead-screw box at the head end of the lathe needs simply to be turned to the right or left to engage the gear or belt feed, or vice versa, without the necessity of disengaging the change-gearing or removing the belts. The belt in this way may be given any required tension necessary to perform its duty without slipping, and the annoyance from breakage and re-lacing are avoided. As the motion is transmitted from the spindle to the lead-screw by the least possible number of gears, all of large diameters, a steady motion is produced, of great value in cutting accurate screws.

The above description applies to the regular design of the engine lathe. The differences in the modified form are confined to the carriage, turret and turret slide. The carriage is very heavy, gibbed to the outside of the bed, both front and back, and is fitted with a turret slide of unusual proportions, 14 inches in width and 20 inches in length, upon which the turret proper revolves. The turret is hexagonal and 14 inches wide across the flats. The holes may be as large as 2½ inches in diameter, and the construction is such that a bar may be passed entirely through the turret. The index pin and clamping lever are on the right side of the turret, and although entirely out of the way, are convenient for manipulation. The lathe is provided with power cross feed as well as longitudinal feed and screw cutting apparatus, and may be equipped with taper attachment if desired. Thus it can perform on chuck or face plate work all the operations usual with a regular engine lathe, with the advantage of greatly increased production in a given time.



ENGINE LATHE, WITH TURRET.

RECEIVED FROM THE TRADE.

Stuart & Co., Cleveland, dealers in iron ores, have just issued in pamphlet form the tables of average cargo analyses of Lake Superior iron ores in 1897, recently prepared by the Bessemer Ore Association, and side by side with the analyses of ores dried at 212 degrees are the equivalents in the natural state. The same company has published a leaflet designed to show the economy of low alumina in furnace mixtures. Calculations are given which show the cost of coke and limestone, valley furnace, to be $2.67 on a furnace yield of 63.113 iron, with no alumina in the mixture, with a gradual increase as alumina increases in the mixture, until a cost of $3.32 is worked out, for coke and limestone, on a furnace yield of 57.63, the mixture containing 2.50 per cent alumina. The calculations are based on a burden of two pounds of ore to one pound of coke, on a 1.50 per cent silicon in the metal and on an assumed mixture carrying .50 per cent manganese, 1 per cent magnesia, .50 per cent lime, 2 per cent organic and volatile, 7 per cent moisture and the amount of silica necessary to produce a slag containing about 12 per cent alumina.

John M. Russell & Co., Springfield, O., in a leaflet devoted to their Eureka boiler compound, make this presentation of the effect of scale: "It is said by all authorities that a coating of scale increases very much the difficulty of heating the water. Scale one fourth of an inch is almost equivalent to an inch of iron. From the various estimates as to proportionate loss of fuel from scale, we quote the following: One-eighth inch of scale requires 28 per cent more fuel to heat the plate; one-fourth inch, 60 per cent, and one-half inch, 150 per cent, or two and a half times the fuel required if the boiler was clean. Water must be heated to a temperature of 150 degrees in order to raise a working pressure of 90 pounds. With one-fourth of an inch of scale intervening the external surface of the boiler must be heated to 580 degrees and with one-half inch of scale to 800 degrees, to accomplish this, which causes the boiler sheets and rivets to become a low red, bringing the boiler to a very weak state, and rendering it unsafe." The Eureka compound is to be applied at night, and the boiler is not to be blown off for a week after. The removal of incrustation is the demonstrated effect of the compound, and after that its use keeps boilers clean. The simplest method of applying the fluid is to pump it in with the feed water.

A pamphlet of the Dey Patents Co., Syracuse, N. Y., describes the ingenious Dey time register. No key is used but the dial carries the numbers, with a hole in front of each. A button on the end of a swinging rod is brought to the right number, then pushed in, and on the ringing of a bell the record is made.

The handsomely illustrated catalogue No. 103 of the B. F.

Sturtevant Co., of Boston, is devoted to the Sturtevant engines for electric light plants and general high grade work. The aim in constructing these engines has been to give nice speed regulation and maximum of horse power with a minimum of metal and of floor space. Over 6,000 of these engines have been sold. They are manufactured in large lots by special tools and parts are readily duplicated. The catalogue, which contains plentiful illustrations and tables, will be sent free on application.

To Make Bessemer Iron from Cranberry Ores.

George B. Parker, representing capitalists closely allied with the Embreville Iron Co., Ltd., of Embreville, Tenn., has just concluded negotiations for the purchase of the Carnegie Furnace, near Johnson City, Tenn. It is as yet undecided whether the furnace will be moved to Embreville, or put in operation where it is. In any event, it will be run under the management of Guy R. Johnson, the general manager of the Embreville Iron Co. The intention is to make special low phosphorus Bessemer out of the well known Cranberry ore. The Carnegie Furnace is 75 x 16 feet and has three Whitwell stoves, 65 x 18 feet. Pocahontas coke is the natural fuel supply.

Beam Manufacturers' Meeting.

The six members of the pool on structural steel met at the Hotel Waldorf last Wednesday. The resignation of Commissioner Bailey was tendered because of a stroke of apoplexy which he suffered recently, and the resignation was accepted. In his place W. C. Temple, of Pittsburg, was chosen commissioner. No changes were made in prices.

Besides an article on the causes of the failure of the Spanish Armada, by Captain Mahan, the June *Century* will contain "Ten Months with the Cuban Insurgents," the experiences of a major in the army under Garcia, and an article on "The Confederate Torpedo Service" by the electrician of the torpedo division in the Confederate Navy who laid the mine which blew up the first gunboat destroyed by this means.

At Baltimore, last week, John Marney, an employe of the Maryland Steel Co., was given a verdict for $15,000 against the company. In trying to stop a break-out of molten metal, which it is claimed would have inflicted serious injury on the workmen, the plaintiff seized a stick to stop the leak. The stick was wet and an explosion occurred which destroyed Marney's eyesight. The case will be appealed.

The city of Rochester, N. Y., has awarded the contract for 20-, 16-, 12- and 10-inch cast iron pipe to the Buffalo Cast Iron Pipe Co. at prices ranging from $15.27 to $15.79 a ton, and for 8-, 6- and 4-inch pipe to the Lake Shore Foundry, of Cleveland, at $16.20.

The increasing iron trade of Alabama is largely responsible for a total of 97,255 cars handled from Jan. 1 to May 1, 1898, by the roads in the Alabama Car Service Association, as against 81,467 cars in the corresponding period in 1897.

The Shiffler Bridge Co., Pittsburg, has been awarded the contract by Laughlin & Co., Ltd., of Pittsburg, for the construction of the steel viaduct for the big ore yard the firm is erecting at its blast furnace plant. Over 1,500 tons of steel will be used in the superstructure. The Shiffler company also has the contract for the erection of a machine shop 220 feet long for the DuBois Iron Works, at DuBois, Pa., besides other important contracts.

Frederick Siemens' "New-Form" furnace for the reheating of iron and steel is meeting with a good deal of success, and there are also 17 furnaces of this type applied to the melting of steel on the open hearth, 250 being in use for the first-named purpose. As many as 40 of these "New-Form" Siemens furnaces were built in England and on the Continent during last year, and that number is likely to be exceeded during the present year. The furnace can also be arranged as a "soaking pit" or "vertical" furnace for steel ingots, and is likely to be further adopted for this class of work.

A POINT IN FOUNDRY MIXTURES.

A New York State foundryman sends the following communication, which illustrates the interest taken in the practical discussions that have marked the proceedings of some of the foundrymen's associations recently. It may serve, moreover, as a text for further profitable interchange of views on the chemistry of foundry mixtures:

"I have been much interested in Major McDowell's recent paper and the discussion by the Western Foundrymen's Association. I have a very peculiar case in hand, and if you will bring it before the association, perhaps some of its members can explain the matter.

"We have a No. 2 pig iron of the following analysis: Graphitic carbon, 3.25; combined carbon, .25; silicon, 2.50 to 2 75; phosphorus, .60 to .70; sulphur, .015 to .03; manganese, .50 to .60. We have used a large amount of this iron with the best of results in combination with a high silicon iron, a strengthening iron, and about 50 per cent of foundry and railroad scrap combined. We have just got a sample car of the same grade, but a No. 3 iron, graded by fracture. The analysis of this special car is as follows: Graphitic carbon, 3.40; combined carbon, .30; silicon, 2.56; phosphorus, .51; sulphur, .032; manganese, .45. The furnaceman states that this may be a little above the average for their No. 3 iron, in silicon. The analysis of the No. 2 iron I have taken from the cards of a number of cars, and give the limits of the variations in the metalloids. On starting to make up a charge of this iron, I was at a loss to know exactly what to do with the No. 3 iron. It seems to be in all respects the same as a No. 2, with the exception of the combined carbon, total carbon and fracture. The variations in the phosphorus, sulphur, and manganese don't seem to me to be enough to have a sufficient effect on results to be noticeable.

"Mr. West, I notice, claimed that carbon can be ignored entirely in considering iron analyses. Major McDowell claimed that with irons that varied in silicon and manganese he could make a composition for any desired purpose. If the carbon has no effect, it would seem to me we could use a No. 3 iron in place of the No. 2, and make quite a little saving in cost, but if this is the case, I don't understand why the fracture of the No. 2 should show so much higher percentage of graphitic carbon crystals, and also larger ones. There is a marked difference between the two.

"Tables which I find in a reliable work show the following percentages of silicon and combined carbon for maximum strength, etc.:

Silicon for maximum hardness 0.80 per cent.
" " " crushing strength, 0.80 per cent.
" " " modulus of elasticity, 1 per cent.
" " " density, 1 per cent.
" " " transverse strength, 1.40 per cent.
" " " tensile strength, 1.80 per cent.
" " best softness and working qualities, 2.50 per cent.
Combined carbon for maximum crushing strength, 1 per cent.
" " " " trans. strength, 0.70 per cent.
" " " " tensile strength, 0.47 per cent.
" " " soft castings 0.15 per cent.
" " " extra soft castings, 0.08 per cent.

"The point is, concerning the irons we have in hand, what effect does the high combined carbon have on the high silicon, and which is the better to go by, chemical analysis or fracture? We have a third iron, which is classed as strong pig, whose analysis is as follows:

Graphitic carbon,	3.41
Combined carbon,	.15
Silicon,	1.87
Phosphorus,	.60
Sulphur,	.021
Manganese,	.60

"I presume that the claim of strength rests on the combination of low silicon and low combined carbon. I should like to hear what foundrymen have to say in regard to strong irons, and how they differ from other irons."

The first of the several branch libraries arranged for by Andrew Carnegie in endowing the Pittsburg Carnegie Library was formally opened last Tuesday, May 10, in the Lawrenceville district of Pittsburg. Among the speakers at the opening exercises was Joseph S. Seaman, president of the Seaman-Sleeth Co., of Pittsburg.

LAKE SUPERIOR IRON MINES.

The Champion Iron Co. has shipped a few car loads of magnetic ore from its mines at Champion, Mich., to be used to replace platinum as anodes in the collection of chlorine gas. The ore is shipped in the shape of slabs and some care must be taken to get it out in blocks of suitable size. In view of the comparatively small amount required for this use, the statement in several newspapers, repeated only last week in a New York daily that "the entire product of the Champion Iron Co. has been contracted for by a New York concern" borders on the humorous.

H. H. Porter, chairman of the Minnesota Iron Co., is thus quoted on the complaint made to the railroad commissioners of Minnesota that the 80-cent rate on ore to Two Harbors and Duluth is too high: "The first effect of this move will be the cancelling of plans for $300,000 worth of Duluth & Iron Range improvements that had been laid out. If I had known 60 days ago that the complaint was to have been made to the railroad and warehouse commission for the reduction in rates I should have had time to cut off about $300,000 worth of other improvements. I know of nothing that will tend to injure this immediate section more than will this attempt to reduce rates. I never yet knew of a reduction of rates for transportation that did not reduce the price of the commodity at the point of consumption. The buyer always gets the entire benefit of cut rates, and generally a little more. The independent miner will not be benefited to the extent of a single dollar, but the buyer of the ore will be benefited to the extent of every cent that might be taken from the cost of transportation."

The Biwabik Mountain Iron Co. has taken a new lease of the Biwabik mine from the fee owner, John M. Williams, of Chicago, at a royalty reduced from 30 to 20 cents per ton. The new lease is dated March 26, 1898, and it replaces the old lease, which was given by Williams to John McKinley in Aug., 1891, and expires in Aug., 1911. The new lease may be terminated by the lessee by giving 90 days' notice to the lessor. The minimum amount of ore to be mined each year is the same as under the old lease—300,000 tons.

C. F. Stuart, of Stuart & Co., Cleveland, J. T. Jones and others have leased what will be known as the Vulcan Silica mine, located near Vulcan on the Menominee range. The property is a high bluff practically without cover, standing at an angle of 80 degrees. A branch track will skirt this bluff at its base. The ore will be guaranteed 40 per cent in iron, 41 per cent. silica, .017 per cent phosphorus, .75 per cent alumina, moisture not to exceed 2 per cent and probably 1 per cent. The amount of ore in sight is large, the cost of ore is low. The ore will be thrown down in blasts and loaded with a steam shovel. Shipments are expected to begin in a few weeks.

The Ætna mine at Mountain Iron, Minn., owned by the Thomas Furnace Co., was idle last year, but it is expected that 75,000 tons will be shipped this season. All needed stripping has been done.

There is a reported renewal of negotiations for the purchase of the Pioneer mine at Ely, Minn., by the Oliver Iron Mining Co. The disagreement between the Pioneer Mining Co., lessees of the mine, and the fee owners, who are Dr. W. J. Conan, Robert and Wm. Patterson, West Superior, and Robert Whitesides, of Duluth, resulted, it will be remembered, in the closing of the mine last fall and the stopping of the pumps. The fee owners demanded a large bonus from the lessees for such an extension of the lease as would enable the latter to sell their stock to the Oliver Iron Mining Co. The terms on which an agreement is now likely to be made, it is reported, are the following: The fee owners agree to extend the lease to 20 years at a straight royalty of 30 cents, with a minimum annual output of 500,000 tons a year. If at any time the price of Pioneer ore at Cleveland should exceed a certain stated price, considerably above the level of prices today, the fee owners are to receive as additional royalty, a certain percentage of the selling price.

The Lake Superior Iron Co. has received at Ishpeming a Barnhart steam shovel, manufactured by the Marion Steam Shovel Co., Marion, O. Its weight is 60 tons. It has a dipper with a capacity of two and one-half yards. It has double engines 10 x 12 inches and the engine upon the dipper arm for driving the dipper with greater force into the pile is 6 x 10 inches.

The option held by the Oliver Mining Co. on Section 26, near Ely, Minn., is understood to have been extended beyond May 1.

At the Mountain Iron mine 28 acres of ore are now uncovered. With 200 men at work, one shovel is loading day and night, while two are stripping on the east bank. Through the center of the mine a ditch has bee cut 2,000 feet long, 6 feet deep and 25 feet wide. At the lower end will be set a Morris centrifugal 1,000 gallon per minute pump. A gasoline 10 h. p. engine will operate it. This will keep the mine clear, it is thought, a long time. Heretofore the mine has drained naturally. All shops and buildings have been moved 3,000 feet from the north to the south, or town end, and have been recontsructed and enlarged. The shops are well equipped with heavy machines.

The Commodore Iron Co. has 100 men at work and the amount of ore hoisted each day is shipped.

Personal.

Theodore J. Shaffer, who succeeded M. M. Garland as president of the Amalgamated Association of Iron and Steel Workers, is a graduate of the University of Western Pennsylvania, and was ordained a minister in the Methodist Episcopal Church. Some years ago while serving a charge at Brownsville, Pa., he resigned to enter a rolling mill. He was employed as roller in the Monongahela Tin Plate Works on their starting up some years ago, and had that position when he was elected president of the Amalgamated Association.

Wm. Garrett, of the Garrett-Cromwell Engineering Co., has returned from a business trip of several months in England and France. At Cannes he superintended the erection of a Garrett rod mill. His company has the contract for the new rod mill at Ashland, Ky. which is being erected by the Ashland Steel Co. and associated nail mill interests of Ironton, O.

Beginning with the present week, Thos. R. Morgan, of the Morgan Engineering Co., Alliance, O., becomes connected with the Wellman-Seaver Engineering Co., of Cleveland.

A. S. Yanton, of Cleveland, has been appointed superintendent of the recently acquired Carrie Furnaces of the Carnegie Steel Co., Ltd. The furnaces have been put under the general management of W. E. Corey, general superintendent of the Homestead Steel Works.

Charles L. Taylor, assistant to president of the Carnegie Steel Co., Ltd., landed in New York last Thursday, after a year's absence in Southern France for his health. Although improved in health, he will remain at Spring Lake, N. J., for further recuperation.

Andrew Carnegie has given the town of Carnegie, Pa., $210,000 for a public library.

Obituary.

John M. Ayer, one of the oldest iron men in Chicago, died in that city May 13, of acute pneumonia. Mr. Ayer was born in 1847 in Kenosha, Wis., where he spent his boyhood. His father, J. B. Ayer, was prominent in that town and afterwards went to Chicago and established an iron and steel business. When the son was 15 years old he joined his father in Chicago. He was graduated from the old University of Chicago, and then entered business with his father. After the latter's death in 1872 he became the head of the several large iron and steel interests. He was manager of the rolling mills at Bridgeport and had a large share in the improvement and growth of Hammond, Ind., where he owned extensive properties. He retired from business altogether about eight years ago.

William Chambers, assistant superintendent of the Eliza Furnaces of Laughlin & Co., Ltd., Pittsburg, died May 14, aged 34 years.

THE Carnegie Steel Co., Ltd., has given orders to have the new bridge across the Monongahela River at Port Perry completed as soon as possible, so that the P. B. & L. E. Railroad to the Edgar Thomson steel works may be connected with the Duquesne and Homestead plants. An additional force of men is now at work on the bridge to-day, and it is expected to have it completed early in July. Two of the largest spans remain to be thrown across, and for this purpose the largest traveler ever erected is being used.

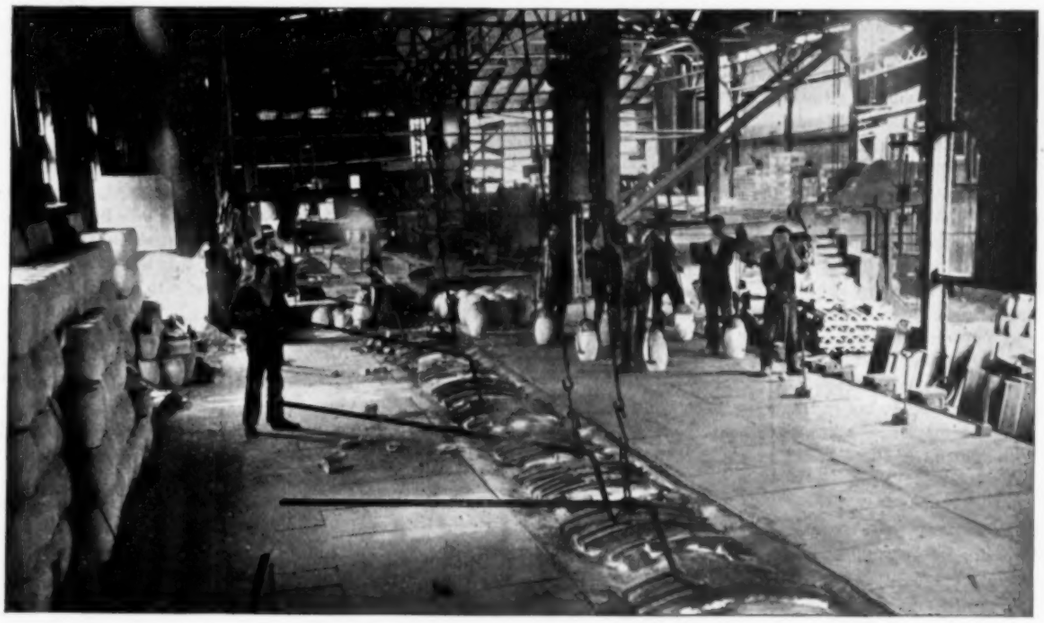
THE LARGEST CRUCIBLE FURNACE.

The Crescent Steel Co., of Pittsburg, is overhauling its enormous ten-hole crucible furnace, which is well known to be the largest crucible furnace ever successfully operated. The photograph given in this connection is a good view of the furnace in action, and was taken just before it was dismantled for repairs.

The record of large crucible furnaces is mainly a series of failures, because of unevenness of heat in their different parts. This difficulty, after no little experimenting, was overcome at the Crescent Steel Works, and the supply of gas from the 60 vents leading into the furnace has been so equalized as to produce uniform heat. The pipe supplying the gas is large and the gas pressure is kept strong enough to force gas in large quantities throughout the circuit made by the pipes. Natural gas is used, although producer gas is available and can be used in case the supply of the other is exhausted.

The ten-hole furnace at the Crescent Steel Works is not new and has been in successful operation for some time. Each hole contains six pots which melt, on an average, about 100 lbs. a heat each. Thus the 60 pots of the one furnace in the six heats each day produce 18 tons of crucible steel.

Besides the large furnace there are four other crucible furnaces making Crescent steel—two of four holes and two of six holes each. The entire crucible output of the works is over 60 tons per day. At present in both the open-hearth and crucible departments the works are in full operation.



THE LARGEST CRUCIBLE FURNACE.

THE *Wall Street Journal* says: "Pennsylvania managers are vigorously prosecuting, this year, the improvements on the main line decided upon some time ago, but postponed more than once by reason of the bad times. These improvements are of a most extensive nature, especially in the Allegheny Mountains between Altoona and the summit. Some very important changes of line have been made and are being made, with the object of taking out troublesome curves and reducing grades. This part of the road is now in better condition than in any previous time in its history. A good deal of it is laid with 100-lb. steel rail in 60-foot lengths, and the smoothness of travel at high speed is very noticeable. Pennsylvania hauls its coal and coke in very heavy train loads. It is no uncommon thing to see over 80 loaded cars on one train, while the majority of the coal and coke trains seem to average 70 to 75 cars."

AMONG the subscriptions made for a new armory at Pittsburg were $20,000 from the Carnegie Steel Co., Ltd., $10,000 from the H. C. Frick Coke Co. and $5,000 from Jones & Laughlins, Ltd.

THE TIN PLATE MARKET.

The improvement noted a week ago has not continued. The market is very quiet and flat for the late deliveries, and firm and well sustained for prompt and near-by deliveries. Spot plates are still in demand at a fair advance over futures. There seems to be a wide range in prices from various mills for deliveries over the last quarter of this year—fully 25c per box between the top and bottom, and this wide variation seems to frighten off any who have been considering the placing of late delivery contracts. No one seems to know what is the bottom. Mills are all busy and well filled with orders up to Sept. 1.

We quote f. o. b. Indiana or Pittsburg districts:

CHARCOAL TINS.

	IC	IX
Calland Grade, tissue packed,	$4.00	$5.00
Allaway Grade,	3.40	4.30

COKE TINS.

IC, 108 lb.	Basis weight,	$2.85
100 lb.	" "	2.75
95 lb.	" "	2.70
90 lb.	" "	2.65
85 lb.	" "	2.60
80 lb.	" "	2.55

WORCESTER GRADE TERNES.

IC, 216 lb., 20 x 28	$5.80
200 lb. "	5.50
190 lb. "	5.40

The above prices are for August to December deliveries, with premium of 5c to 7½c a box for June and July.

BIDS for the construction of a new rod mill of the Garrett type, for the Ashland Steel Co., Ashland, Ky., have been taken lately. The plant will contain 100 wire drawing machines and galvanizing department. It will be located alongside the Bessemer steel plant of the Ashland Steel Co. The Norton Iron Works, of Ashland, and the Belfont Iron Works Co. and the Kelly Nail & Iron Co., of Ironton, these three concerns being owners of the Ashland Steel Co., will install wire nail machines and use the product of the new plant. The capacity will be about 350 tons of wire per day, and it is hoped to have the plant ready for operation Oct. 1. Bessemer metal will be supplied by Sarah Furnace, owned and operated by Belfont Iron Works, at Ironton. It is also probable that two furnaces of the Ashland Coal & Iron Railway Co. at present making foundry iron will be turned on Bessemer. It is believed these three furnaces will give enough metal to take care of the converting capacity of the new plant.

AMERICAN TIN PLATE PRODUCTION.

It was announced in connection with the report of the production of tin plate and black plate in the United States issued by Col. Ira Ayer, for the fiscal year ending June 30, 1897, that these would be the last statistics gathered under the auspices of the Treasury Department. The *Metal Worker* has collected the statistics for the six months ending Dec. 31, 1897, and presents the following statement:

Out of the 36 works that were operating during the last half of last year returns were secured from 35. In only one instance, that of a Western six-mill concern, was it necessary to estimate. In regard to the dipping concerns, including works which dip plate for their own use, which must be added if the total consumption of plate in the United States is kept track of, the reports are not quite so complete. Out of the total number of concerns operating dipping plants during the last half of last year, dividing them according to the number of dipping sets, reports were received from about two-thirds, so that the estimate for the unreported companies cannot, at the worst, make any serious error in the result. The figures we have received from dipping concerns representing 107 tinning sets, amount to 29,499,283 pounds for the six months ended Dec. 31, 1897. There remain 45 dipping sets, leaving out those which it is known certainly were not in operation at the end of last year. Estimating these 45 sets as turning out one-half the amount reported from the 107 sets, or 14,749,642 pounds, makes a total for the production of dipping plants of 44,248,925 pounds for the last half of last year.

For purposes of classification we have divided the works into two districts, East and West. The Eastern mills include all those along the Atlantic coast, Pennsylvania, West Virginia and what is known as the Pittsburg district. The Western mills take in the rest of the country—that is, Ohio, Indiana, Illinois, Missouri and all States west of Pennsylvania. The Eastern companies, as we have classified them, include 22 works operating 128 hot mills, 10 of these mills being operated by concerns making black plate only. The total black plate product of these Eastern mills amounted to 214,226,156 pounds for the six months ended Dec. 31, 1897. The finished tin plate product of the same works during that period amounted to 155,280,126 pounds. The Western works number 14, operating 87 hot mills, including three exclusively devoted to making black plate which were not tinned by the works. The output of these Western mills for the six months was of black plate, 135,014,093 pounds, and of finished tin plate, 122,676,676 pounds.

Adding these together, we get for the total production of the country for the six months ending Dec. 31, 1897 Black plate, 349,240,249 pounds for the second half of 1897; tin plate produced by mills rolling black plate, 277,956,802 pounds. This was the product of 36 works operating 215 hot mills. To the production of tin plate it is necessary to add the product of the dipping concerns, which was 44,248,925 pounds, giving a total output for the six months ended Dec. 31, 1897, of tin and plate of all kinds, 322,205,727 pounds. On the basis of 108 pounds to the box, this is equivalent to 2,983,386 boxes, which is at the rate of 5,966,772 boxes per year. It will be seen that the black plate output during the last half of last year exceeded the tin plate product by 27,034,522 pounds. If this were added to the product of finished tin plate, the rate would be raised to 6,467,412 boxes per year.

It is interesting to study the figures presented above and figure out the capacity of mills and make other deductions, though these inferences could be multiplied indefinitely. A few deductions and comparisons, however, may not be without interest. Dividing the total product of black plate for tinning made by the works by the number of mills, we find that the average product of hot mills for six months in black plate was equal to 1,624,373 pounds, or 15,040 boxes, for that period. This, divided by 26, gives an average output of 578 boxes per mill per week. Considering the fact that a great many of the mills were closed part of the time, we think it will be conceded that this is a very high average output, although of course it has not reached the maximum of some modern plants, which have left the 500 mark and are pushing on toward 1,000 boxes per week.

For the six months ended June 30, 1897, the Government statistics compiled by Col. Ayer reported a total production of 252,650,227 pounds of black plate and 252,553,901 pounds of tin and terne plate in the United States. The last half of 1897, therefore, showed an increase of 96,590,022 pounds, or nearly 31 per cent, in black plate production, and an increase of 69,651,826 pounds, or about 24 per cent, in the production of finished tin plate, as compared with the first half of the year.

Adding together the Government figures for the first six months of 1897 and our own figures for the last six months of the year gives the total production of American mills in the calendar year 1897 as: Black plate, 601,890,476 pounds; tin and terne plate, 574,759,628 pounds. Dividing this by 108, the tin plate production for 1897 is thus seen to be 5,321,848 boxes. For the calendar year 1896 Col. Ayer's figures place the production of black plate at 366,180,809 pounds and of tin plate at 369,229,796 pounds. This gives a net increase for 1897 of 235,709,667 pounds of black plate and 205,529,832 pounds of tin plate.

NEW SYSTEM OF HANDLING TIN PLATE ROLLS.

The suggestion has been made by a gentleman who has had the benefit of many years of close observation of rolling mill practice, that the best way to handle tin rolls for turning would be to keep the rolls always in the housings, and make the change at the end of the week by lifting the whole mill from its place by a powerful crane which would carry it to a convenient place, where the turning of the rolls could be done at leisure during the following week right in the housings, a fresh mill being put down in its place as soon as the necessary cleaning has been done. This would necessitate, instead of an extra pair of rolls, a complete additional mill. The gentleman who makes this suggestion has no commercial interest whatever in the additional equipment which would be called for, and his opinion is entirely unbiased. The idea appears to be one which should be more closely inquired into. That it is entirely practicable is evidenced by the practice of the Lorain rail mill. In this plant it is necessary to change rolls very frequently, on account of the wide variety of sections called for. A building, 50 x 125 feet, is reserved for storing mills and changing rolls in them. At any time the visitor can see rows of mills of different descriptions and with varied shaped rolls in them, waiting to be carried into the mill to replace some other mill at short notice. Some of the mills weigh as much as 38 tons, and a change has been made in less than an hour, without any previous warning on the part of the mill superintendent or the crew.

The tie rods now provided to hold the housings in relation to each other in a tin mill are probably sufficient to maintain the whole mill in proper shape during and after the transfer. In most cases there is probably at the present time no crane sufficiently powerful to handle the load, which, however, is not really excessive. Ample provision can be made for the proper rests, slow motion, etc., by which accurate turning can be done in the housings. One of the difficulties which has attended such work as heretofore practiced has been the short space of time permitted after the rolls have cooled down and before it is time to resume operations for the following week. With a whole week to do the work in, this difficulty would vanish. To turn the rolls in the housings requires that the bearings be all accurately adjusted, but that should be the case anyway for good work in rolling. In fact, herein seems to lie an important advantage of the system proposed, in that the same brasses and supports would be used in connection with a given pair of rolls. It is impossible to keep roll necks and brasses to any standard. The brass must find a bearing on the particular roll neck with which it is placed. In doing this each week, a certain amount of irregular wear occurs. Even if a separate pair of brasses were provided for each roll—and this would be preferable to the present method—there would be irregularities in the seats and adjusment of the brasses, the evil effects of which would be totally eradicated by the system of keeping all together until something breaks or wears out. There is no doubt whatever that there would be less wear of brasses with this system, and it is probable that many a roll or housing is broken by an imperfect fit. A sudden heating of a portion of a roll neck is caused where there is unevenness and undue pressure between neck and brass, and this is likely to cause a break at once, or start a minute crack which will ultimately mean a break. Again,

where the side adjustment of the roll is not what it should be, the knocking against the columns of the housing is a cause of the occasional breaking of the housing itself.

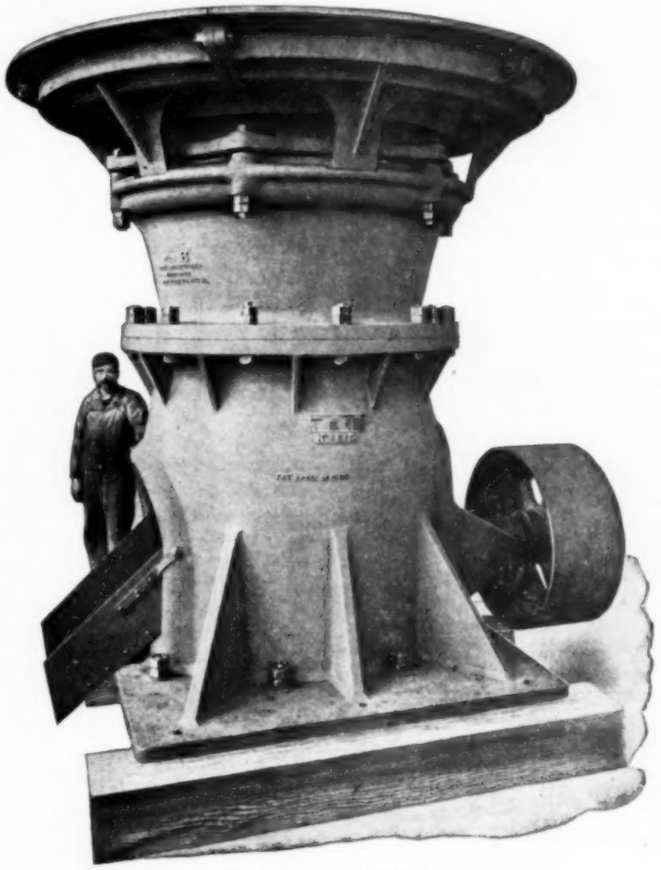
With the growing tendency to push tin mills to their full capacity, or frequently beyond their real capacity, something must be done to provide against rolls with bad surfaces toward the end of the week. This has caused the addition of separate roughing stands at a number of works—in fact, there are more American works using the separate roughing stand than would be imagined without an investigation—and their use has not and will not accomplish all that is desired in the way of large output. If the system of changing the whole mill were in vogue, and some arrangement were provided by which rolls could be properly heated and made ready, or almost ready, for regular work, then it would be a matter of only an hour or two to change in the middle of the week. If rolls were only used eight turns to the turning, all difficulty with rough and irregular surfaces would disappear. It does not seem unreasonable to suppose that, were the complete mill set up in the roll turning department, with slow motion connection, it would be a simple matter to devise some means of heating the rolls to get the same effect that is secured by the preliminary rolling done early on Monday under the present syctem. It is merely necessary to heat the roll through, and to have the heat in the central cross section the greatest, tapering off toward each end. The problem may not seem simple now, because little is known as to the absolute temperature of a tin plate roll in its different parts when in actual use, but a series of experiments is shortly to be made, the result of which may be given in these columns, which will determine pretty accurately just what degrees of heat are actually required in the different parts of the roll, to fit it for the immediate commencement of regular rolling, at the full output of the mill. Were such a system of heating made practicable, the gain in getting the full output during the first turns of the week would more than make up the slight loss of time which would be required in the middle of the week to change mills. —[Tin and Terne.

An order for 20 anchors, each to weigh 4,000 pounds, has been received by the American Steel Casting Co., of Sharon, Pa. They will be shipped to South Africa.

GATES CRUSHER FOR MARQUETTE ORES.

The Lake Superior Iron Co is fourth among the producers of hard ores in the Lake Superior region to install a crusher at the mine, for the purpose of delivering its ores to the furnacemen in size more uniform and the better facilitating reduction. The machine just purchased by the company is the No. 8 breaker of the Gates Iron Works, Chicago, shown in the illustration. It weighs 90,000 lbs.; its guaranteed output is 125 tons of ore an hour. The power required to operate it is about 125 h. p.

The Gates breaker is of the gyratory form. The crushing is done between a cone placed on a gyratory shaft vertical through the center of a cylindrical shell. As it gyrates, the crushing cone impinges against the sides of the shell in relation to which it is constantly approaching and receding. The top of the shaft carrying the crushing cone is held rigidly while the bottom is gyrated (with a certain amount of eccentricity, depending upon the size of the machine) by means of a simple gearing. The diameter of the breaking head corresponds nearly to the width of the jaw in the jaw breaker receiving the same size of material. At the same time the



GATES' ORE CRUSHER.

circumference of the head of the Gates crusher is three times the width of the opening in the jaw crusher, and a complete gyration is made in the time required for the jaw crusher to approach and recede. Thus the amount of material operated on in a given time is multiplied in the case of the gyratory breaker. To compensate for the wear on the head and concaves of the machine, the head of the Gates breaker can be raised. In a new crusher the head and concaves are put in to suit the requirements. Where the product wanted varies considerably in size extra liners can be put in as required. The inner surface of the liners being concave in form, a space is left behind the central portions of the pieces of rock or ore, which, as they drop into place, are supported only at each end. This facilitates a clean break when struck in the center by the gyrating head or cone, and less power is necessary.

A large number of machines similar to that which is to be put in at Ishpeming mine for the Lake Superior Iron Co. have been sold by the Gates Iron Works for breaking ore, flux and ballast. At a limestone quarry supplying large Pittsburg blast furnaces a No. 8 crusher in a 14 months' run crushed 23,174 cars, averaging 24 gross tons per car. This is an hourly average of over 180 tons, or more than three tons a minute through the entire period. Some of the large day records were extraordinary. In one day of 10 hours 2,500 tons of ore was crushed; this is 256 tons an hour and nearly 4 tons a minute. This performance was at the works of the Pittsburg Limestone Co., Ltd., at New Castle, Pa.

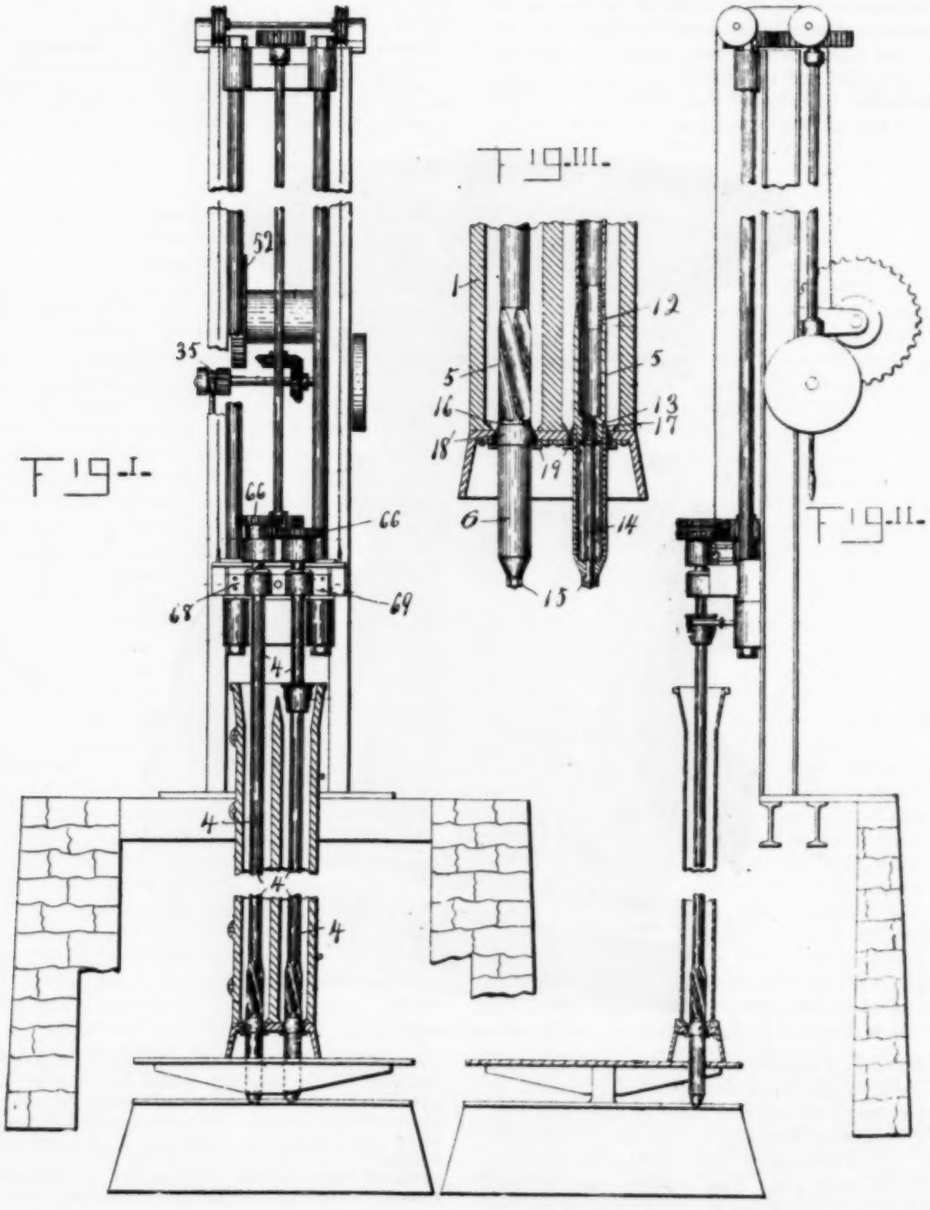
APPARATUS FOR FORMING PIPE MOLDS.

John K. Gunn, of Utica, N. Y., has designed an improvement in the method of forming pipe molds in stationary flasks. His apparatus uniformly packs the sand in the mold without tamping and a smooth finish is given the surface, avoiding bulges and irregularity in the exterior of the pipe. The chief features of the apparatus are a rotating "packer," with an irregular surface and a non-rotating "follower" or finisher attached to a shaft, which elevates the packer and finisher simultaneously and rotates the packer.

A front elevation of the apparatus appears in Fig. 1, which shows the double flask in section. Fig. 2 gives a corresponding side view and the top of the turn-table in section. In Fig. 3 the lower end of the double flask is shown, with one packer and one finisher in elevation and the other two in vertical section. The flasks shown are divided, as is usual, into halves connected by hinges (shown in Fig. 1) so that they may be easily opened and the cast pipe dropped out. A main shaft 4 sustains and operates the packer 5 and the finisher 6. The packer is formed with cam-shaped projections so that its greatest diameter is greater than the diameter of the shaft.

As to the mode of operation and the advantages of the apparatus the inventor makes this statement:

"The same mechanism for operating the packers and finishers may be used with various sizes of flasks and pipe-molds. When smaller pipes are to be molded, the gears 66 66, sustained on the links, are swung nearer together. When larger, farther apart, being always centered over the flasks. The size of pipe to be cast having been decided upon the flasks (here shown double) are set in position on the ramming-seat, carried on the turn-table in the pit, and swung into position under the apparatus herein described. The rings for forming the bead in the mold are set in position in the lower ends of the flasks. When the pipe is molded head down, the formers for the head of course take the place of these rings. The detachable support 68, carrying main shafts, packers, and finishers, is secured in position on the saddle, and the packers are carefully centered and lowered into the flask to the position shown in Figs. I and II, the 'finisher guide' 6 extending downwardly through opening in turn-table. The sand is then poured in and the operative mechanism set in motion, which may be done as soon as the sand covers the packer, by which means the packer is rotated and the finisher simultaneously elevated, packing the sand firmly and uniformly and smoothly finishing the interior of the mold throughout its whole length. I prefer to rotate the packer a few times before throwing pinion 35 into engagement with gear 52 and beginning the elevation, by which the sand at the bottom is well packed. The head-form is not disengaged from its hook and set in the upper flaring end of the flask till the packer approaches the upper end of the flask, in order to avoid danger



APPARATUS FOR FORMING PIPE MOLDS.

of clogging and of blocking flow of sand. The packer and the finisher may each be as long as may be desired. One to two feet for each is a good size. The projections or ribs on the packer may be as many as desirable, generally fewer for smaller molds, more for larger, and of any desirable form, though I much prefer the spiral arrangement of ribs.

"This apparatus may be said to belong to the Smith type, in which a short spiral packer is sustained and operated on the end of a shaft, but is essentially different therefrom in its construction and mode of operation, by which it overcomes the old disadvantages. It is simple, quick, and convenient in changing sizes and adjustment for either single or double molds. The objectionable bearings which are cut by the sand, are avoided, the main shafts being attached to the saddle at a single point, which is at their upper ends and as far as possible from the sand. None of the parts which touch the sand pass through a bearing. The finisher acts as an absolute guide for the packer. It should be carefully centered in the mold; but a slight variation may be disregarded, as the packer will be drawn out absolutely straight. A little rotation of the finisher will do no harm; but the friction of the sand will prevent practically all rotation thereof. The packer and finisher are both simple and cheap. The finisher will last indefinitely. The packer wearing down much more quickly, may be replaced easily. A little wear may be disregarded, as the larger finisher fixes the size of the hole. Finally, the operative mechanism is simple and cheap in its detail construction."

Amalgamated Wage Committee.

The wage scale committee of the Amalgamated Association of Iron and Steel Workers met in Pittsburg last Friday, to go over the suggestions for scale changes preparatory to the Cincinnati convention, which opened on Tuesday, May 17. The changes talked of at this stage are not many. The $4.50 puddling rate, instead of $4 is again being asked for and will be considered by the convention. The proposed bar iron base is 1.1c, instead of 1c. Aside from this the tin plate scale will probably be the only scale much altered. A 10 per cent advance is talked of in this. The men give as their reasons that tin plate is being sold at a rate far below the price of imported plate, and they demand the restoration of the wages which they received under the McKinley tariff law. Some of the sheet mill workers are also in line with a demand for an increase. At the convention there will be opposition to the plan of having a conference with the manufacturers every 60 days. Some of the delegates favor a permanent rate for the year. President Shaffer is in favor of continuing the plan which has been in force during the past year, as it gives the workmen a better chance. A minimum rate is fixed, and no matter how low the market prices go, the men will receive this minimum price for their labor. If, on the other hand, the market goes up, this is shown at the 60-day conference, and a corresponding rise in wages is made.

The War and the British Supply of Spanish Ores.

A few weeks ago some of our English exchanges were disposed to speak lightly of the possibility of the war with Spain, which was then threatened, interfering with the supply of Spanish ores for Great Britain. In its issue just at hand the London *Iron and Coal Trades Review* takes the matter more seriously:

"It is inevitable that the war should excite apprehensions as to our supplies of iron ore from Spain. The Bilbao district is now our mainstay for imported ores. Our total imports of iron ore from Spain now average over 5,000,000 tons a year. Anything that might interfere with the regularity, and especially with the maintenance of the volume, of those supplies, would be little short of a national calamity. Dangers appear to be threatened from three different sources—from the withdrawal of labor from the mines, from the imposition of taxes to meet special war expenditure, and from the increased cost of freights, due to the probable interference of the war with the carrying of coal to Spain, and the consequent stoppage for a time of return cargoes. The British Iron Trade Association has this week taken steps to urge upon the Spanish Government the importance of refraining from levying special taxation on ore exports, or in any other way interfering with our supplies. But if the war lasts the Spanish Government may be at their wits' ends for resources, and then they are not likely to consider treaty obligations or British interests too seriously. Meanwhile, it would be very desirable to have our eyes and ears well about us, so that we may be able to take prompt action in the way of securing other possible sources of supply. There is an abundance of good ores available at a price. Every country is more or less completely furnished with this commodity. Even the United States have recently talked of sending us some of their Lake Superior surplus, and negotiations, we believe, have actually been in progress with that end in view. Our own North American colonies, and especially Nova Scotia and Newfoundland, have large iron ore resources that have hardly as yet been tapped. Some of the South and Central American Republics are very rich in ore supplies, and the same remark applies to India, New South Wales, New Zealand, and other colonies more or less remote. But perhaps the most promising of all immediately available sources of supply is Sweden, and especially the ores of Gellivara, which the members of the Iron and Steel Institute will have the opportunity of seeing in about four months from the present time.

Mr. Carnegie on Pittsburg's Shipping Advantages.

Andrew Carnegie, in a letter to the Pittsburg papers of May 15, quotes the recent paragraph in *The Iron Trade Review* announcing the removal of the Charles Munson Belting Co.'s plant from Chicago to Pittsburg, in order to secure a more central location and save freight on Eastern business. Mr. Carnegie comments: "Here is the most convincing proof I have yet seen of the soundness of the views I ventured to express recently regarding the position of Pittsburg as the manufacturing center of the future. It is the first complete removal of works from the Western to the Central district I have noted, although the starting in Pittsburg of the Fox pressed steel truck plant also proved that its original location in Joliet was too far west to command the entire country, and that the works were needed in the center. A location in Pittsburg enables the manufacturer to invade most cheaply all quarters, East, West, North and South, as no other location does. We need only justice from the railroad combination, and with improved waterways our destiny will be insured beyond doubt."

On account of the vibrations due to engines and other machinery the ordinary cement concrete floor has not been found entirely durable. An advantageous composition, according to *Erfindungen und Erfahrungen*, is made of lime, sand, cement and clinkers, which should be used in thicknesses of at least 10 inches. The best mixture is said to be: Portland cement, 1 part; unslacked lime, ½ part; sand, 3 parts, and sifted clinkers, free from ashes, from 7 to 8 parts. For a top dressing of finer mass the composition should be 1 part cement, 3 parts sand and 2 parts of finely ground and sifted clinkers, the dressing to be well rammed and rolled after laying. Floors constructed in this way are said to be practically indestructible.

Mr. Archer Brown, of New York, resident partner of Rogers, Brown & Co., is thus quoted by the New York *Times*: "The newspaper talk on both sides of the ocean of a possible pig iron famine in Great Britain and this country has little basis of fact. Great Britain last year consumed her output, drew about 500,000 tons from stocks, and used 91,000 tons from America. The London *Statist* drew from this the conclusion that this year their reserve stocks would be exhausted, for increase of output in Great Britain is not likely. The condition, however, has materially changed on the other side. While home consumption is larger than ever, the British export trade has fallen off heavily. The result is that Middlesborough stocks just now are accumulating instead of running off. The German output has increased by nearly 1,000,000 tons a year, and that country is determined to take care of her home requirements. This cuts off a good deal of trade which England hitherto has relied on. On this side, production of pig iron will decline rather than increase unless prices improve. If prices improve materially we could run our 12,000,000 tons annual production up to 14,000,000, and some think as high as 15,000,000 tons. The latter, however, would be the maximum of existing capacity."

CHANGES WROUGHT BY THE WAR.

We are at war, sure enough, and whatever the ultimate tide of battle may be it is a popular war with all who bear the American name. From thoughts of peace and of peaceful pursuits we have all suddenly, very suddenly, been brought face to face with new conditions and new ideas. We talk glibly now of our abandoned isolation as one of the world's great powers, of our West Indian policy, of our possible permanent ownership of the Philippine Islands at the farther side of the Pacific Ocean, and of the permanent maintenance of a great navy and a large army. We have put behind us all thought of paying off the national debt and of reducing either direct or indirect taxation, and instead view with the utmost complacency propositions to increase the debt and increase taxation. Our blood is up. It has long been known to ourselves that we are a military people, jealous of our rights and our national honor, and now we propose to teach all the nations who have not heretofore recognized this fact that we must be reckoned with in the settlement of other people's rights. The Monroe doctrine is to have a wider interpretation. Surely it is a great change.

Whether the war could have been avoided or not this change will do us great and permanent good. When our blood cools and schemes of territorial extension that have followed the victory at Manilla are abandoned it will be found that we have as a result of this war taken a great stride forward in national development and in the assertion of our national importance. The change has been productive of immense good already. All Europe respects us far more than it did a month ago. It sees what we can do when we are pushed; how tremendous is the energy of our people; how unlimited are our resources. We realize ourselves as we never realized before what a mighty people we are when we are united. That we are a completely united people to-day, with no North and no South, with Lee and Wheeler major generals in the army of the Union, is another and not the least important of the benefits that have already accrued to us from this war.

We have no doubt of the final result. Our great productive industries, thanks to the protective policy which has built them up, and built our great lines of transporation, will enable us to sustain a long struggle if that should be necessary. We shall not want for ships or guns, for food or clothing, for any thing that is needed in the prosecution of a great war. But the fact that we possess immense workshops and have been accustomed to great industrial enterprises, which have educated a great army of accomplished engineers and skilled mechanics, constitutes of itself one of the strongest reasons for believing that the war cannot be of long duration. See what these engineers and mechanics have enabled our navy to do already! But for them we would not have had our magnificent battleships and cruisers, with their superb equipment of guns and armor. American valor knows how to handle them.—[Bulletin of the American Iron and Steel Association.

Compressed Air In a Rolling Mill.

Compressed Air gives a description of the plant of the Passaic Rolling Mill Co., at Paterson, N. J., in which compressed air is extensively used. These works cover about 25 acres of ground, employ about 1,200 men, and have a monthly output of about 5,000 tons, chiefly structural steel, a considerable portion of which is manufactured into bridge trusses, columns, etc., at the works. By the use of this power the capacity of the rolls has been trebled and work formerly requiring the services of 13 men is now done by four and with less danger. The apparatus is operated by both air and steam, and consists of two transfer tables, one on each side of the rolling mill, the duty of one of which is to deliver the heated billet to the first roll, move into position to receive it from the second, move and deliver it to the third, and so on till the billet comes out a finished beam. After the beam leaves the roll it is passed to the hot saw, where it is trimmed and cut to length. It is then received on rollers that transmit it to the table without handling or any stoppage in its movement, so that a few seconds after it has had its last squeeze in the rolls it is being cut by the saw. This saw is fed through the beam by a compressed air cylinder, 12 inches in diameter by 20-inch stroke. The elastic but persistent nature of the feed given the saw by compressed air is found much better than any other method.

CONDITION OF BLAST FURNACES OF U. S.*

May 1, 1898.

Location of Furnaces.	Coke and Anthracite					Charcoal.				
	Total No. of Stacks.	In Blast.		Out of Blast.		Total No. of Stacks.	In Blast.		Out of Blast.	
		Number.	Weekly capacity.	Number.	Weekly capacity.		Number.	Weekly capacity	Number.	Weekly capacity.
New York	18	3	4164	15	8017	5	2	225	3	350
New Jersey	5	2	1726	3	1327	.....	.....	.....	.....	.....
Spiegel	3	2	425	1	100	.....	.....	.....	.....	.....
Pennsylvania:						13	0	0	13	750
Lehigh Valley	37	9	5969	28	12580	.....	.....	.....	.....	.....
Spiegel	1	0	0	1	100	.....	.....	.....	.....	.....
Schuylkill Valley	17	7	5108	10	5550	.....	.....	.....	.....	.....
Upper Susqu. Val	5	2	2006	3	1780	.....	.....	.....	.....	.....
Lower Susqu. Val	9	4	4893	5	2486	.....	.....	.....	.....	.....
Spiegel	1	1	478	0	0	.....	.....	.....	.....	.....
Lebanon Valley	12	8	6579	4	1803	.....	.....	.....	.....	.....
Pittsburgh	28	27	57670	1	2100	.....	.....	.....	.....	.....
Spiegel	2	2	1094	0	0	.....	.....	.....	.....	.....
Shenango Valley	17	11	16647	6	3250	.....	.....	.....	.....	.....
Jun. and Con. Vals	14	5	7318	9	4969	.....	.....	.....	.....	.....
Spiegel	1	1	671	0	0	.....	.....	.....	.....	.....
Youghiogheny Val	3	1	1364	2	1900	.....	.....	.....	.....	.....
Miscellaneous	5	2	2440	3	1789	.....	.....	.....	.....	.....
Maryland	5	2	3750	3	3870	4	4	0	4	574
Wheeling District	9	9	12399	0	0	.....	.....	.....	.....	.....
Ohio:						9	0	0	9	730
Mahoning Valley	11	8	13286	3	4093	.....	.....	.....	.....	.....
Central & Northern	11	10	14744	1	1230	.....	.....	.....	.....	.....
Hocking Valley	2	0	0	2	850	.....	.....	.....	.....	.....
Hanging Rock	12	5	1650	7	2114	.....	.....	.....	.....	.....
Indiana	1	0	0	1	130	.....	.....	.....	.....	.....
Illinois	16	14	24723	2	3350	.....	.....	.....	.....	.....
Spiegel	1	1	1209	0	0	.....	.....	.....	.....	.....
Minnesota	1	0	0	1	629	.....	.....	.....	.....	.....
Wisconsin	4	3	2945	1	770	.....	.....	.....	.....	.....
Missouri	3	1	839	2	720	1	1	335	0	0
Colorado	3	1	1463	2	3620	.....	.....	.....	.....	.....
Virginia	21	7	4894	14	9430	4	0	0	4	417
Kentucky	6	4	1952	2	1450	3	0	0	3	200
Alabama	39	18	19781	21	14150	12	2	771	10	2250
Mich. and Wisconsin	.....	.....	.....	.....	.....	17	8	4296	9	3060
Tennessee	13	6	5405	7	3409	9	1	280	8	2420
Georgia	2	0	0	2	960	3	1	325	2	360
North Carolina	2	0	0	2	600	.....	.....	.....	.....	.....
New England	.....	.....	.....	.....	.....	11	2	160	9	858
Texas	.....	.....	.....	.....	.....	4	1	179	3	770
Utah	.....	.....	.....	.....	.....	1	0	0	1	175
Oregon	.....	.....	.....	.....	.....	1	0	0	1	275
Totals	340	176	227592	164	99116	97	18	6571	79	13209

SUMMARY.

Fuel.	In Blast.						Out of Blast.			
	Number.			Weekly Capacity.			Number.		Weekly Capacity.	
		Month Previous.	Year Previous.		Month Previous.	Year Previous.		Month Previous.		Month Previous.
Charcoal	18	16	13	65,71	5,716	3,729	79	81	13,209	13,553
Coke and Anthracite	176	178	133	227,592	227,623	166,799	164	162	99,116	95,537
Total	194	194	146	234,163	233,339	170,528	243	243	112,325	109,089

*Condensed from the *Iron Age*.

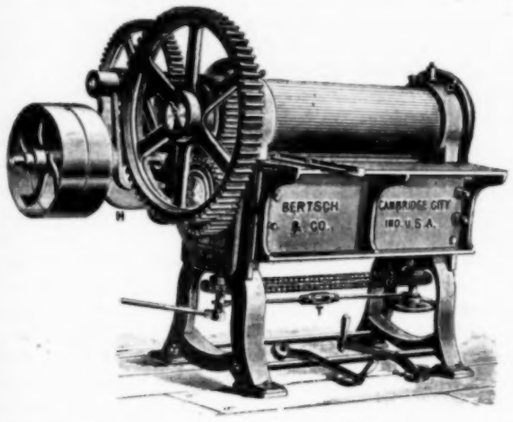
Chas. H. Cramp is thus quoted concerning the two vessels about to be built for Russia at the Cramp yards: "One is to be a battleship of 12,500 tons, and the other will be an armored cruiser of 6,000 tons. In building these two vessels we intend to accomplish two things never before attempted. First of all we mean to break all records both as to the time of construction and the speed capacity of these ships. The battleship, according to the terms of the contract, must be able to make 18 knots an hour in actual service. The armored cruiser must and will travel through the water at the rate of 23 knots an hour. We have furnished the plans and specifications for these two ships. These plans have been drawn with special reference to what is known among naval experts as "sea keeping power," which is simply another name for steaming radius. I am not at liberty to go into the details of construction at this time, but I will say that the new ships will be able to steam from St. Petersburg to Port Arthur in China without recoaling. This is necessary for the reason that the coaling stations of the Russian Navy are not as numerous as those of the other great powers."

In the United States Circuit Court, at Pittsburg, a hearing was held last week in the case of the United States Mitis Co., Ltd., of Philadelphia, against the Carnegie Steel Co., which involves the validity of patents upon a process for amalgamating steel and aluminum.

IMPROVED CRIMPING ROLL.

The illustration is of an improved double back-geared crimper manufactured by Bertsch & Co., of Cambridge City, Ind. The rolls are of hammered steel, the top roll having extra long journal bearings, with practically self-adjusting box bearings to compensate for wear. These are readily adjusted by the top set screws, preventing any lost motion. Both ends of the lower roll are adjusted accurately at one time by special large steel screws. It has been found by experience that it is not practicable to adjust the top roll. The adjusting screws would soon become worn, and the top roll would be liable to be raised more on one side than on the other, especially if the metal is not of an even thickness, or should be to one side of the center of the roll. Thus the metal would not be crimped a uniform depth across the sheet. The lower roll being adjusted instead, there cannot be any lost motion in the adjusting screw with which to contend.

The lower roll journal bearing boxes are conveniently adjusted sideways, as it is necessary to keep the rolls in accurate line with each other; in other words, the corrugations in the two rolls must be in proper line with each other to prevent imperfect work, and also requiring less power. By this arrangement, also, there is ample compensation for the wear



of the pinions on the roll journals, to adjust properly the roll sideways, so that the corrugations in the lower roll will be in the center and in line with the upper corrugations, and not to one side as is indicated more or less on the crimped metal where a roll is working under these difficulties, and also out of alignment.

The frames are heavy and practically self-contained, by the attached heavy angle shaped table which is planed and fitted to the frames rigidly. The back gearing is self-contained, by the attached heavy shaft support bracket which is planed and fitted rigidly to the main frame. The gearing is out of the way, being on one end, compact and in line, reducing friction to a minimum. The roll pinions are wide and cut out of the solid blanks, as are the pulley shaft pinions. The machine weighs 4,900 pounds, and is heavily built. The 12 x 37½-inch size gives five corrugations per inch.

Passaic Rolling Mill Explosion.

Some details of the boiler explosion which occurred at the Passaic Rolling Mills, Paterson, N. J., May 4, are given by the *Railroad Gazette:* The boiler house contained 14 horizontal tubular boilers, each 60 inches diameter by 16 feet in length, and capable of developing in all about 2,000 h. p. An examination a few hours after the explosion made it evident that not more than two of the boilers exploded, although nearly all the others were damaged and some entirely destroyed. At the time of the explosion seven of the boilers had been cleaned and four others were being attended to by the son of the regular fireman, who occasionally took his father's place, and was regarded by the night engineer in charge as a very competent man. According to the statement of Mr. Charles Rose, who had charge of the electric lighting station of the plant, there was but 50 lbs. pressure in the boiler room a few minutes before the explosion occurred. This, however, does not prove anything in regard to the pressure in the boilers at the time of the explosion, and the only one who could give evidence on that point was the man in charge, who was killed by the accident.

An examination of the different parts, which were thrown in all directions, leads one to believe that the boilers which exploded were of the best material, much better, in fact, than some of the others which are still in position, some of which were not under fire at the time. The theory has been advanced that the gas accumulating from the pea coal, which was used as a fuel, was the direct cause; but the manner in which many of the pieces were torn from the boiler proper, and other particulars observed and gathered a few hours after the explosion, rather bar this theory from reasonable consideration. The crown piece, weighing about 500 or 600 lbs., was thrown some 500 feet, and 12 of the rivets which were used in the dome were completely sheared off. Other pieces were sent a considerable distance, and some of the machinery in the vicinity was damaged. It was very fortunate that the gas generators, 12 in number, which were located directly to the south of the boiler house, were not damaged. Had these exploded the loss would be much greater.

Important Air Motor Contract Let.

The Metropolitan Street Railway Co. has made a contract with the American Air Power Co. for the equipment of the 28th and 29th street line, New York City, with the Hoadley-Knight motor. The contract is for the complete equipment, including 20 cars, which will be of the same type and external appearance as the Broadway cars. A new power house will be built on the property of the Metropolitan Co. in West 23rd street, opposite the Pennsylvania terminal. The air compressor, for which the order has been placed, is of 1,000 h. p. capacity and is of the Ingersoll-Sergeant four-stage single-acting type provided with intercoolers between each pair of cylinders, and a final cooler after the fourth stage cylinder. The air cylinders are to be vertical and will be set underneath the engine, which is a vertical cross-compound condensing Reynolds' Corliss engine, built by the E. P. Allis Co. Air will be compressed to a suitable pressure and will charge the cylinders or bottles used in the cars.

The American Air Power Co., which was formed by the combination of the Hoadley-Knight and Hardie companies, has a capital of $7,000,000. Its president is A. A. McLeod, formerly president of the Reading Railway and the Boston & Maine, and its directors are William L. Elkins, Thomas Dolan, Thomas Ryan, Joseph H. Hoadley and A. A. McLeod. Its relations with the Metropolitan Co. have been very intimate, and for several months past part of the power house at 146th st. and Lenox ave. has been used by the Air Power Co. for experimental work. Several cars have been equipped with air motors there and have been run successfully over the Lenox ave. line.

War and the Export Trade.

The United States Export Association has issued the following circular to the members in answer to inquiries regarding war risks: "Some of our members have asked what the probable effect of war with Spain would be upon export trade, and whether there was likely to be any serious interruption of shipments on account of the seizure of American goods in transit on the ocean. As the answer is of interest to all we embody it in the following: American goods in American ships would be subject to capture by the enemy, but only four per cent of our entire exports are carried in American ships, and with the discontinuance of the American line steamers, the ships of which have been taken by our Government, this percentage will be still further reduced. At least 96 per cent of our exports are carried in neutral bottoms, and unless contraband of war are not likely to be interfered with. Contraband of war signifies, broadly speaking, anything of use in war. To sum up, there is no reason why American manufacturers should cease their efforts to widen their market, except in Spain and her colonies—Cuba, Porto Rico and the Philippine Islands."

CONSIDERABLE work is being done on the Pittsburg division of the Baltimore & Ohio Railroad in replacing old bridges with new and stronger structures. Nine single-span, five two-span and one three-span steel bridges are now being erected.

BLOWHOLES IN IRON CASTINGS.

In these days of superior workmanship we still hear much of the so-called blowholes in castings. Recent inventions in the way of fluxes have not altogether removed these defects, although one would have thought, when these fluxes were being introduced into the trade, that a panacea for a very large percentage of the molder's troubles had been found. It does seem strange that should a casting have ever so small a hole showing itself on a finished part, the molder has to carry the weight of it all, whereas it is one of those faults which more properly belong to the iron smelter; or, if such a complaint as above indicated should appear in a more intensified form, the said fault is largely due to the engineer, or the one responsible for designing the casting. The intensified form is usually a "draw" through disproportionate metal, and 95 per cent of what are termed in finished work "blowholes" are simply misnomers, they being entirely due to shrinkage. I do not say that modern fluxes can in no way improve the founder's position; but while these may be useful in eliminating and giving increased fluidity, they never can densify disproportionate thickness. I have often wondered if the smelter, in his reflective moments, ever thought that he made bad castings, too. It matters not how much blowing a crude pig may show in fracture, the same product would have to be returned in the form of first-class finished work; and the fact of modern fluxes being so much to the front clearly indicates that much is at fault with pig metal for which the molder cannot be held responsible.

WHAT A BLOWHOLE IS.

Many are the theories to explain the cause of blowholes; but as theorizing is merely speculative work, all such have proved of little account in practice. Once understood, it will not be difficult to remember that a blowhole—that is, a hole formed in a casting through the action of an air-bell—is always of a clear color, and has a hard or chilled surface. A shrinkage or vacuum hole is generally of a bluish color, its interior being rugged, and at times takes the form of a rough spider's web. The contrast here is very decided; therefore, no one need be mistaken. No such holes as those of the latter description are to be found in proportionate metal. A very common form of blowhole is usually styled in foundry parlance a "blister." This form of blowhole is very common on pipes that are cast in green sand in the horizontal position. In this matter opinion differs very much as to its cause. Some maintain that it is caused by too hard ramming of the top part of flask, while others maintain it is caused by the core being too hard, the latter being the true solution. More than twenty years ago I happened to be working in a shop doing a large trade in green sand column and pipe work. Along with others I was at times troubled with blistering on the top side of those castings, they appearing so bad at times in a 9-foot length of pipe, that at a distance of about two feet from the flange of both ends (after breaking the skin, which is no thicker than ordinary silk paper) in several places of the space mentioned one could easily fit in the side of one's finger. These blisters are always hidden until by accident or otherwise they may be broken. The simplest way to find them is by rubbing the head of a fettler's hammer across the top side of the casting, and immediately the hammer passes across they will respond by a slight whistling sound. As a practical molder I have never found too hard ramming of green sand pipes to tend to cause blistering; neither do I regard the use of the vent wire in such work a necessity. The hardest ramming of sand retains sufficient porosity to admit easy exit of the gases. Again, a top part that may be rammed up with too wet sand would never retain its metal. The chances are that immediately it was cast it would emit its metal with such a spluttering that no way of saving it would be possible.

A core that is too hard may be so from two causes—first, from too hard ramming; and second, from the sand being too wet. It may be asked what guidance there is to determine with accuracy what consistency it required? To this I say there is but little, it being simply a matter of continued practice and close observation as to results. A sand that gives off a perceptible amount of water, or, as it were, sweats the core box in making the core, is certainly not good. Cores made from such sand are dense, difficult to vent, and troublesome to the fettler in coring the casting.

DEFECTIVE LOAM CORES.

A defective loam core may be due to several causes. Two of these may be mentioned—namely, too strong loam (by this I mean a predominance of clay or plastic matter, such substance closing up the most porous of loams); and second, should a core, on receiving the last coat of loam, be wrought to the extent of bringing up a glazed surface, it will tend to cause blistering. In these two classes of cores are to be found that which should be avoided, more especially in horizontal pipe casting; but wherever it exists, if the molder, before black-washing such cores, would simply draw his card along the glazed surface, and destroy it, he need have little fear of the result. There is no necessity for carding the whole core; this roughing of the top side admits a free exit of the gases contained in the core. To those who may have doubts upon this matter, I should like to draw their attention to a contrast of a dry sand and loam core against a green sand one. In using a green sand core, should the core scab, the unanimous opinion would be that too hard ramming was the cause. This is similar to what takes place with a dry sand or loam core that is too hard and glazed on the surface, with this difference—that we get the blister on the latter, while we have the scab on the former; the blister being formed by the unrest of the metal and the strength of the core maintaining its entirety. But were the surface of the core to break away (a thing that never happened in my experience) there would be a scab in the place of the blister, thus clearly showing that blisters or blowholes in such castings are caused by laxity in venting.—[A Foreman Molder, in the *Mechanical World*.

Recent Australian Rail Letting.

A Melbourne letter to *Bradstreet's* has the following concerning the bids on steel rails opened in March by the Victorian Government: "One item of special American interest deserves notice. A month ago the tender of an American firm—the Pennsylvania & Maryland Co.—was accepted by the Victorian Government for 12,780 tons of steel rails and 1,250 tons of fishplates, the total amount of the tender (delivery at Melbourne) being £75,471. For the steel rails alone the average price is £4 19s. 9d. per ton. The Carnegie Co. tendered for the rails only at £5 1s. 9d. per ton, but their tender was rejected as informal. Two English companies, which have before supplied rails to the colony of Victoria, were influenced by the recollection of the difficulties arising out of the peculiar fishplate requirements, and tendered higher than they would have done."

The Movement for More Uniform Foundry Iron.

E. H. Putnam, member of the executive committee of the American Foundrymen's Association, whose well conducted foundry department in the Chattanooga *Tradesman* is familiar to foundrymen, comments as follows on the proposition the Pittsburg Foundrymen's Association is to bring up at Cincinnati next month, to insure greater accuracy in the grading of pig iron by analysis: "At the last meeting of the Pittsburg Foundrymen's Association a committee was appointed to carry up to the Cincinnati convention the project of Mr. Thos. D. West for establishing some means of affording to all standardized drillings to facilitate and perfect the testing chemically of pig iron. Some people may not indorse the plan exactly as outlined by Mr. West. But if anybody has a better plan the convention will afford a fit place for its exploitation. Mr. West has certainly taken a tremendous stride in the right direction, viz., toward bringing about conditions that will insure reliability in analysis. The very valuable tables which were secured through the indefatigable labors of Mr. West, indicate that analysis as now generally practiced is, to say the least, inaccurate. And, if inaccurate, then misleading. And this will never do. The importance of this question is attested by the numerous letters that have been written by representative men, favorably commenting upon Mr. West's work. It is to be hoped that some effective plan will be formulated at the Cincinnati convention that all can subscribe to."

THE Wrought Iron Bridge Co., of Canton, O., has made an advance of 10 per cent in the wages of all employes, effective at once.

In these COCHRANE SEPARATORS, which are made for taking water out of live steam (insurance for engines) and for taking oil out of exhaust steam (insurance for boilers), you will find a plain, practical, common sense design, that has been proven by actual use, and a thoroughly mechanical construction. Over 1,800 in operation.

Harrison Safety Boiler Works, Philadelphia, Pa.

Manufacturers of the

Cochrane Heaters.

INDUSTRIAL SUMMARY.

New Buyers in the Market, and Some of Their Wants :—

[If you are in need of machinery of any description, please notify *The Iron Trade Review*, and we will put you in communication with our advertisers at once.]

The certificate of incorporation of the Missouri Wire & Nail Co., of East St. Louis, capital $10,000, Richard M. Scruggs, Charles F. Hinze and Arthur N. Sager, incorporators, was filed last week.

New Construction:—

Plans are being prepared by Stoltze & Shick, La Crosse, Wis., for new buildings for the La Crosse Plow Co.

The Toledo & Maumee Valley Railway is preparing plans for a new power house at Miami, O.

The Born Steel Range Co., with offices in Cleveland and works at Galion, O , has decided to erect a plant in Cleveland. The company recently purchased three and one-half acres of ground on Pearl st., and will begin the erection of a frame building 120 feet by 650 feet in size, and one story high.

The machine shop at Delaware College, Wilmington, Del., will be rebuilt.

Additions, Enlargements, Removals, Etc.:—

An addition is being built to the United States Seamless Tube Co.'s plant at Christy Park. The new structure is to cover about 100 feet.

Beaver, Pa., will enlarge their water works at a cost of $28,000. A new pumping plant will be added.

The Moline Malleable Iron Co., St. Charles, Ill., has just made an addition to its foundry 80 x 300 feet, containing a 10-ton air furnace, and doubling the capacity of the plant. The company is having a large sale of its link belting and other specialties.

The American Emery Wheel Works, of Boston, Mass, has completed arrangements for putting up a two-story brick factory, 100 x 45 feet, in Providence, R. I., where its main office will be located after Sept. 1.

The Ætna-Standard Iron & Steel Co., Bridgeport, O., manufacturer of iron and steel, has installed a large sheet mill of new construction, which is being run double turn.

The J. I. Case Threshing Machine Co., of Racine, Wis., has received overtures from a syndicate to remove its extensive plant employing about 600 men from Racine to Waukegan, Ill.

Fires and Accidents:—

The Iron City Boiler Works of James Lappan & Co., Pittsburg, was damaged by fire last week, to the extent of $5,000.

At Greensburg, Pa., May 12, fire destroyed the engine, machinery, washer, tanks, etc., of the McCreery coke works at Graceton, occasioning a loss of at least $12,000, upon which there is but $6,500 insurance.

Fire damaged the Iron City Boiler Works of James Lappan & Co., 21st and Pike sts., Pittsburg, to the extent of $5,000, on May 11.

Fire in the machine shops of Fallenbaum & Co., Philadelphia, May 10, caused a loss of $3,000.

General Industrial Notes:—

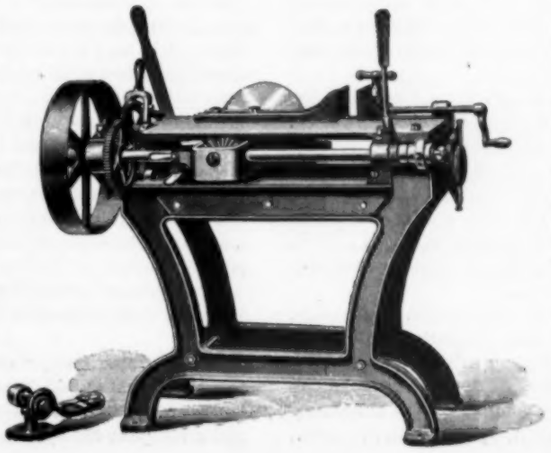
The Providence Iron Works in the state of Jalisco, Mex., are advertising in other columns for a buyer. Abnormal conditions appear to prevail in that country in the iron industry.

The power plant of the Carnegie Steel Co.'s Edgar Thomson mill is to be enlarged by the addition of apparatus from the Westinghouse Electric & Mfg. Co. The new generator is to be the Westinghouse standard 800 k. w., 250 volt, 85 r. p. m. engine type machine. It will be direct-connected to a vertical Allis-Corliss engine and will operate in multiple with two 400 k. w. Westinghouse generators already installed. The present switchboard is to be enlarged by the addition of a new

The Q & C Shop Saws

Cut Everything. - - - -

No. 1. Capacity, 4 inches.
No. 2. " 5 "
No. 4. " 8 "
No. 8. " 3x12 "



POWER SAWING MACHINES

For all purposes.

THE Q AND C

Chicago. New York.

Send for Catalogue.

MOUNT SAVAGE FIRE BRICK.

UNION MINING CO.,

Proprietors of the CELEBRATED Mount Savage Fire Brick

GOVERNMENT ‡ STANDARD.

Established 1841. Capacity, 60,000 Per Day; 18,000,000 Per Year.

The First Manufactory of its Kind in the U. S.

Home Office and Works:—MOUNT SAVAGE, Alleganv County, Md.

Branch Offices:—No. 1 Broadway, New York, N. Y.; No. 222 So. Third St., Philadelphia, Pa.; Ferguson Block, Pittsburgh, Pa., Stowe, Fuller & Co., 195 Merwin St., Cleveland, Ohio.

OTIS STEEL

"OTIS" FIRE-BOX PLATES A SPECIALTY.

Flange Plates, Ship Plates, Tank Plates, Steel Car Axles and Forgings of all kinds.

Steel Castings from 100 to 75,000 lbs.

Head Office and Works, CLEVELAND, OHIO.

Agencies: NEW YORK, 97 Cedar St. CHICAGO, Old Colony Bldg.
ST. LOUIS, 516 N. Third St. WASHINGTON, Kellogg Bldg.
MONTREAL, J. G. Sibbald, 3 Windsor Hotel.
SAN FRANCISCO, John Woodlock, 26 Beale St.

generator panel, to provide for the operation of the new machinery.

The stockholders of the Blairsville Rolling Mill & Tin Plate Co., Blairsville, Pa., would consider an offer for the purchase of their plant, owing to the recent death of the president and principal stockholder of the company. The Blairsville plant has two tin mills, which have been operated regularly. W. F. Potts Son & Co., of Philadelphia, control the output of the works.

The stockholders of the Sloss Iron & Steel Co. met at Birmingham, Ala., May 10, and elected the directors for the ensuing year: J. C. Maben, W. E. Strong, John H. Rutherford, W. H. Coady, and Richard Mortimer, of New York; Joseph Bryan, of Richmond, Va.; Judge T. B. Lyons, of Charlottsville, N. C., and Sol Haas, and Gen. E. W. Rucker, of Birmingham. The only change made was that Judge Lyons was elected in place of E. D. Christian, of Richmond.

The Oil Well Supply Co., Pittsburg, which purchased the old rolling mill once operated by the Elba Iron Co., has fitted up the mill, which has been idle since 1893 and will operate it.

Recent advances have been made in Cambria Iron Co. stock, Wall Street advices being that a stock dividend may come soon.

The Michigan Iron & Steel Co., of Muskegon, Mich., is arranging to start its plant on May 20 on the co-operative plan. The Michigan Iron & Steel Co. puts in the use of the mill as one of the co-operative partners, and employes are given equal voice in the management and a chance to acquire stock at a low price. The mill has a 9-inch and 18-inch train, four furnaces, Smith gas producers and a 20-ton open-hearth steel plant and nut bolt and washer machinery.

When the two new blast furnaces which the Ohio Steel Co. is planning to build adjoining its plant at Youngstown, O., are completed, direct metal will be taken to the converters. There is an important saving in this method.

The West End Rolling Mill Co., Wellsville, O., has let the contract for the building of the plant to George S. Boak, of Youngstown, O. The structure will be wood and iron. Work will begin as soon as the railroad siding is put in. Contracts for equipment will be made later.

The Rice Machinery Co. 166-174 South Clinton st. Chicago, is sustaining its reputation as builder of grain-handling and power transmission machinery. This firm's business at present is larger than at any time in the last three years. Among contracts lately completed by this company is the machinery for the new elevator of R. H. Truitt, 85th and Stewart ave., Chicago, a large elevator at Dallas, Tex.; Curtis Mill & Elevator Co.,, Curtis, Neb., and for the repairs recently completed by the terminal elevator at Superior, Wis.

In reference to the 20 freight locomotives recently ordered from the Baldwin Locomotive Works by a Russian railroad, the St. Petersburg correspondent of the Berlin *Boersen-Zeitung* informs that paper that the price agreed upon was $13,000 for each machine, delivery to be made in six months. At the same time this road placed an order for 25 locomotives of the Mallet compound system with a French company at Belfort, the price being $16,200, with delivery in 1899. The prices in both instances include delivery in Riga, as well as mounting the machines. It is understood that half of the locomotives were ordered in France in compliance with the "wish" of the Russian Government that French manufacturers should be especially favored by Russian companies when ordering goods abroad. The correspondent concludes: "Since all the Russian locomotive works are filled up with orders for long periods to come, private railroads will have to supply themselves from foreign countries; and in such cases the Americans, with their low prices and extremely short periods for delivery, are, of course, the first to be considered."—[Journal of Commerce, New York.

The Westinghouse Electric & Mfg. Co., of Pittsburg, has received a contract from the Lewiston, Brunswick & Bath Railroad Co., for the equipment of its 30-mile system with a novel arrangement of generating and power transmitting apparatus. The generators, which are to supply both direct and alternating currents simultaneously, are to be located at Brunswick, Me., the initial installment to be 1,000 h. p. The direct current will be used in and about Brunswick, and the alternating current will be raised to 10,000 volts and transmitted to Bath and Lisbon Falls, where it will be reduced and changed to direct current by rotary transformers. The Westinghouse company will also supply the electrical apparatus for the new plant of the Detroit, Ypsilanti & Ann Arbor Railroad. It will consist of four 300-h. p. generators, three boosters, switchboards, and 10 car equipments, including 40 50-h. p. motors.

Since the sale of the Norway Furnace, New Castle, to the Shenango Valley Steel Co., it has been renamed the Shenango Furnace.

The Hazelton furnace of the Andrews Bros., Co., Youngstown, O., went out of blast last week and a force of workmen is making alterations. The stock house roof is to be raised and a complete bin system installed similar to that at the Du-

U. BAIRD MACHINERY CO.,

123-125 Water St., **PITTSBURG, PA.,** 124-126 First Ave.

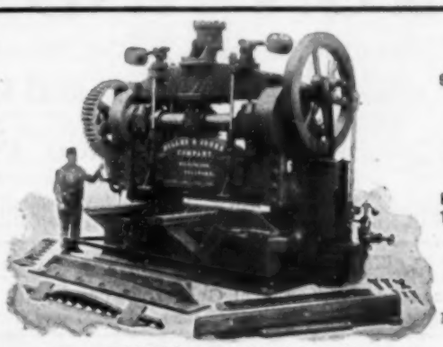
Machine Tools and Supplies. Send for list of Second-hand Tools.

McDOWELL
SEMI-STEEL
PROCESS.

(Cupola metal.) Government tests 36,000 to 49,000 tens. strength.

HANSON McDOWELL,
1522 Monadnock. Chicago.

A firm needing a certain line of goods naturally turns first to those it has seen oftenest advertised, and with whose name it thus has become familiar. "Keeping everlastingly at it brings success."



Improved Multiple Punch and Gate Shear.

Hilles & Jones Company,
908 Church St., WILMINGTON, DELAWARE.

MANUFACTURERS OF
IMPROVED MACHINE TOOLS
FOR
Bridge and Structural Iron Works, Boiler and Tank Shops, Locomotive and Car Works.

PLATE STRAIGHTENING ROLLS
especially designed for
ROLLING MILL SERVICE.

Larger and smaller sizes for any capacity Engine, Motor and Pulley driven.

PUNCHES AND SHEARS
OF ALL KINDS
MANUFACTURED BY
The Long & Allstatter Co.,
HAMILTON, OHIO.
Send for catalogue.

Kirtland C. Gardner, M. E.
GENERAL
DRAUGHTING
AND
DESIGNING.
Address
415 Sibley St.,
CLEVELAND, O.

quesne furnaces. The tracks running into the stock house will be elevated and ore and coke dropped from hopper cars into the bins. The stack will have a new hearth and new bosh and the number of tuyeres will be increased to 12.

The Pittsburg City Councils last week voted to vacate portions of certain streets on the South Side, Pittsburg, adjacent to the plant of Jones & Laughlins, Ltd. The acquired property will be used for yard extensions by the steel company.

At Peoria, Ill., R. Herschel Mfg. Co.'s plant, recently burned, is to be established in the Nicol Burr Plant, where the company will manufacture farm machinery.

The Coleman-Shields rolling mill at Niles, O., has started up after a long idleness.

The Kansas City Car & Foundry Co., Kansas City, Mo., elected the following officers at its annual meeting: President, K. B. Armour; vice-president, L. E. James; secretary and treasurer, Robert Moody. The past year has been a very successful one.

The Navy Department has advertised for 7,700 tons of armor plate for the Illinois, Alabama and Wisconsin, at a price not exceeding $400.

The first run in five years was made at the old Whiteley malleable plant at Springfield, O., last week.

The business of the Lincoln Foundry at Hartford, Conn., has been taken in charge by the Lincoln Co., a corporation formed to carry on a general foundry and machinery manufacturing business, and making metallic castings and forgings of all kinds. It has $125,000 capital stock.

At Waukegan, Ill., the wire mill of the Washburn-Moen Co. is very busy, averaging 500,000 lbs. in 24 hours. The bale tie department is behind its orders and running day and night. Six furnaces are running in the galvanizing department.

The project of a large basic steel plant, to be erected by the Tennessee Coal, Iron & Railroad Co., is again mooted, and it is claimed, with some assurance of being carried out. It is said the financing of the enterprise will be carried through by some of the principal stockholders and by interested railroads. About $1,000,000 will be needed.

The Tennessee Coal, Iron & Railroad Co. has just sold a round lot of basic iron to the Pencoyd Iron Works at Pencoyd, Pa.

The business of the Pennsylvania Steel Co. for April, represented by deliveries on contracts was upward of $1,000,000, and was somewhat in excess of March business.

Cahall boilers are being installed at the Lochiel Furnace, Harrisburg, to furnish the additional steaming capacity required.

It is announced that while the idea of building new shops at Peoria, Ill., has been given up by the Toledo, Peoria & Western Railroad, the old buildings will be repaired somewhat and new machinery added.

The old Iron Bay Works at West Duluth, Minn., will be started up by the Malleable Iron & Machine Works for the manufacture of car couplers and other malleables, provided an additional $6,000 or $7,000 stock is taken in the company.

As a result of the recent annual meeting of the General Electric Co. it is stated that a reorganization will take place, by which the common stock will be placed upon a dividend paying basis and the preferred stockholders have their claims put in order. The plan which finds the most favor is to reduce the common stock to $15,000,000 and increase the preferred stock by the amounts due as back dividends. The dividend on the new preferred stock will probably be at the rate of 4 or 5 per cent. It will also be non-cumulative. The prospects for the coming year are the best in the history of the General Electric Co. from the net earnings standpoint.

FLAG-RAISINGS have been numerous in the last two weeks at the various plants in the valleys, Wheeling and Pittsburg district. In several instances the flag-staffs were made from the product of the mills. At the National Tube Works, McKeesport, a flag 27 x 47 feet was raised on a pole 150 feet high. The staff was made at the works and consists of a series

INLAND IRON & FORGE CO.,

Marquette Building, CHICAGO, Manufacturers of

BAR IRON AND STEEL,

Angles, Channels and Special Shapes for Car, Carriage and Wagon Work.

Iron and Steel Car Axles and Forgings.

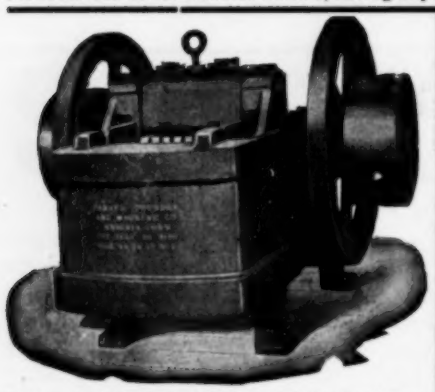
Works, EAST CHICAGO, IND.

(Formerly owned by East Chicago Iron & Steel Co.)

Conestoga Building, EDWARD E. ERIKSON, PITTSBURG, PA.

Regenerative Gas Furnaces and Water Seal Gas Producers.

Producer Gas under Tubular Boilers, saving 20 per cent in fuel. NO SMOKE.



THE FARREL (Blake Pattern,) (Ore and Rock.)

--- CRUSHER.

STANDARD OF THE WORLD.

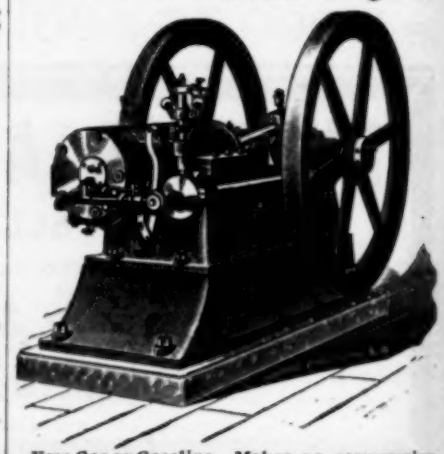
Farrel Foundry and Machine Co.,

EARLE C. BACON, Engineer,

Havemeyer Bldg., NEW YORK.

If you are thinking of enlarging your mill, foundry or machine shop, or of purchasing machinery of any kind, send us a line giving character of machinery needed. We can put you in communication with manufacturers from whom you can buy advantageously.

The Brown GAS AND GASOLINE Engine.



Uses Gas or Gasoline. Makes no compression while engine is running idle. Charges fired with electric spark tube igniter. Made upon honor and fully guaranteed. Write for description and prices.

Columbus Machine Co.,

COLUMBUS, O.

of pipes, the lowest one being 16 inches in diameter. Each succeeding pipe is smaller until the top pipe is only 2 inches in diameter. The flag and the staff will cost $1,000, which will be paid jointly by the company and the employes.

REDUCED FARES.

To Various Points via Pennsylvania Lines.

Excursion tickets will be sold via Pennsylvania Lines as indicated in the following paragraphs. Although concessions in fare are authorized for meetings of certain Orders, tickets may be obtained by any person whether a member of the Order or interested in the event. The reduced rates will be open to everybody.

To New Orleans, La.—May 6th, 7th and 8th, account meeting B. P. O. Elks. Return limit fifteen days.

To Warsaw, Ind., (Winona Lake).—May 16th, 17th, 18th, 19th, 20th and 21st, good returning until June 3d, account Presbyterian General Assembly.

To Dayton, O.—May 23d and 24th, from points in Ohio only, account Knights of Pythias Grand Lodge of Ohio; good to return until May 25th.

To Columbus, O.—May 24th and 25th, account State Conventions of People's Party, Liberal Party and Silver Republicans, from Ohio points only. Return limit May 26th.

To Dallas, Texas—June 11th and 12th, account meeting of Nobles of Mystic Shrine. Return limit, June 28th.

To Columbus, O.—June 13th and 14th, good returning until June 17th, for State Sunday School Convention. From points in Ohio only.

To Mt. Vernon, Ohio—June 13th and 14th good to return until June 17th for State G. A. R. Encampment. Excursion rates in effect from points in Ohio only.

To Louisville, Ky.—June 19th and 20th, for Jr. O. U. A. M. National Council Meeting. Return limit June 20th.

To Mansfield, Ohio—June 27th and 28th, for State Christian Endeavor Convention. From points in Ohio only; good returning until July 1st.

To Washington, D. C.—July 3d, 4th, 5th and 6th, for the National Educational Association Meeting. Good to return July 15th, with privilege to extend return limit until August 31st.

To Indianapolis, Ind.—August 8th and 9th, for L. A. W. National Meet. Return limit, August 15th.

To Richmond, Ind.—August 19th and 20th, good returning until August 28th, account Society of Friends Conference.

To Indianapolis, Ind.—August 20th, 21st and 22nd for Knights of Pythias Grand Encampment and Supreme Lodge Session. Return limit August 30th, with privilege to extend until September 10th.

To Cincinnati, Ohio—September 3d, 4th, 5th and 6th, for the G. A. R. National Encampment. Good returning until September 13th, with privilege of extension until October 2nd.

To Pittsburg, Pa.—October 8th, 9th, 10th, 11th, 12th and 13th, good returning until October 17th, account Knights Templar Triennial Conclave. Return limit may be extended until October 31st.

During the excursion season special rates will also be in effect via Pennsylvania Lines for special and local events. For particular information, please apply to nearest Ticket Agent of the Pennsylvania Lines, or address C. L. Kimball, Assistant General Passenger Agent, Cleveland, Ohio.